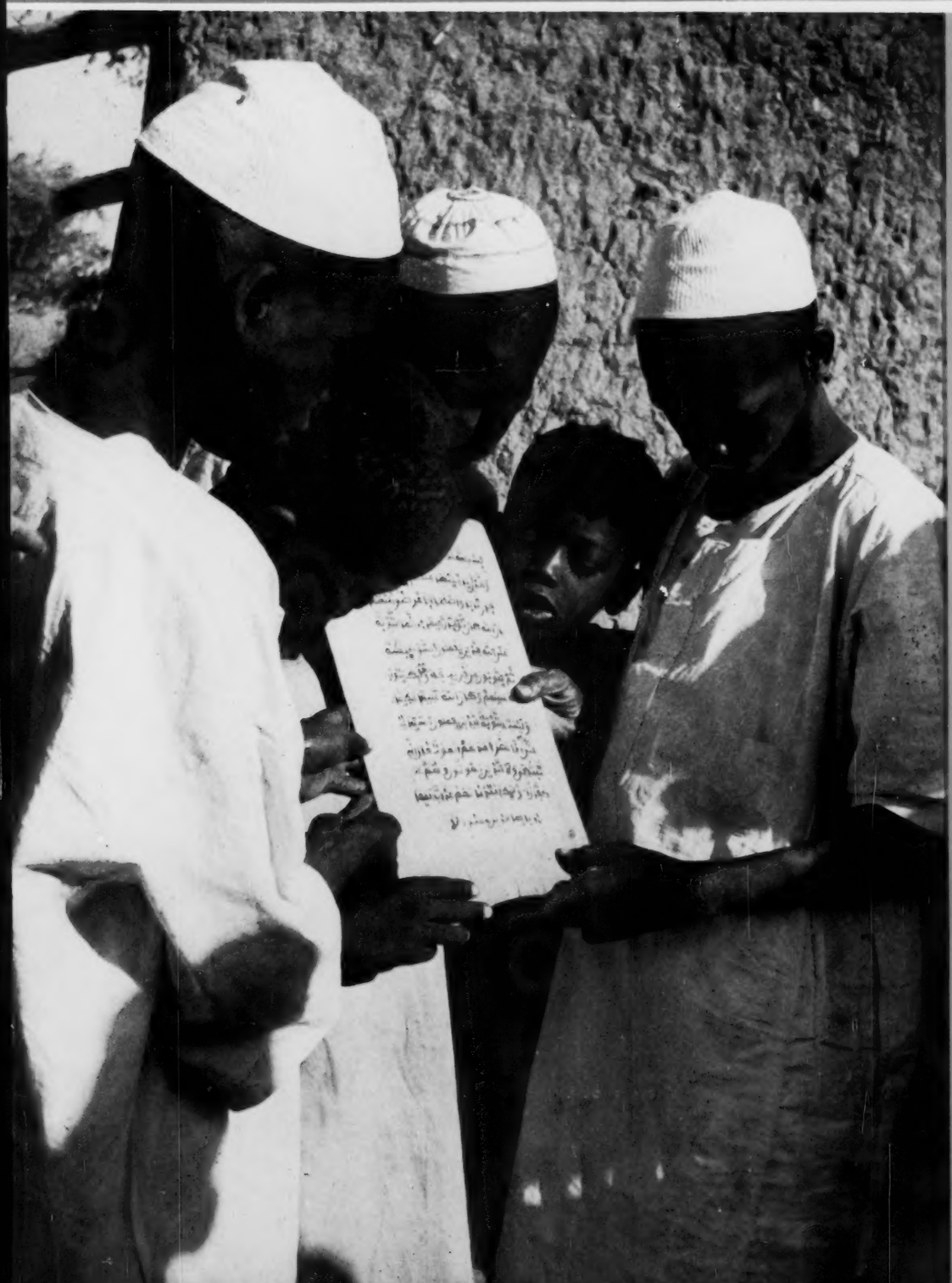
PULP & PAPER

WORLD REVIEW NUMBER...1957

New World Records:
67,843,779 Tons—Paper
54,372,758 Tons—Pulp

World Market Pulp Directory



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and 52 more . . .

■

NIGERIA . . . New Paper Consumers

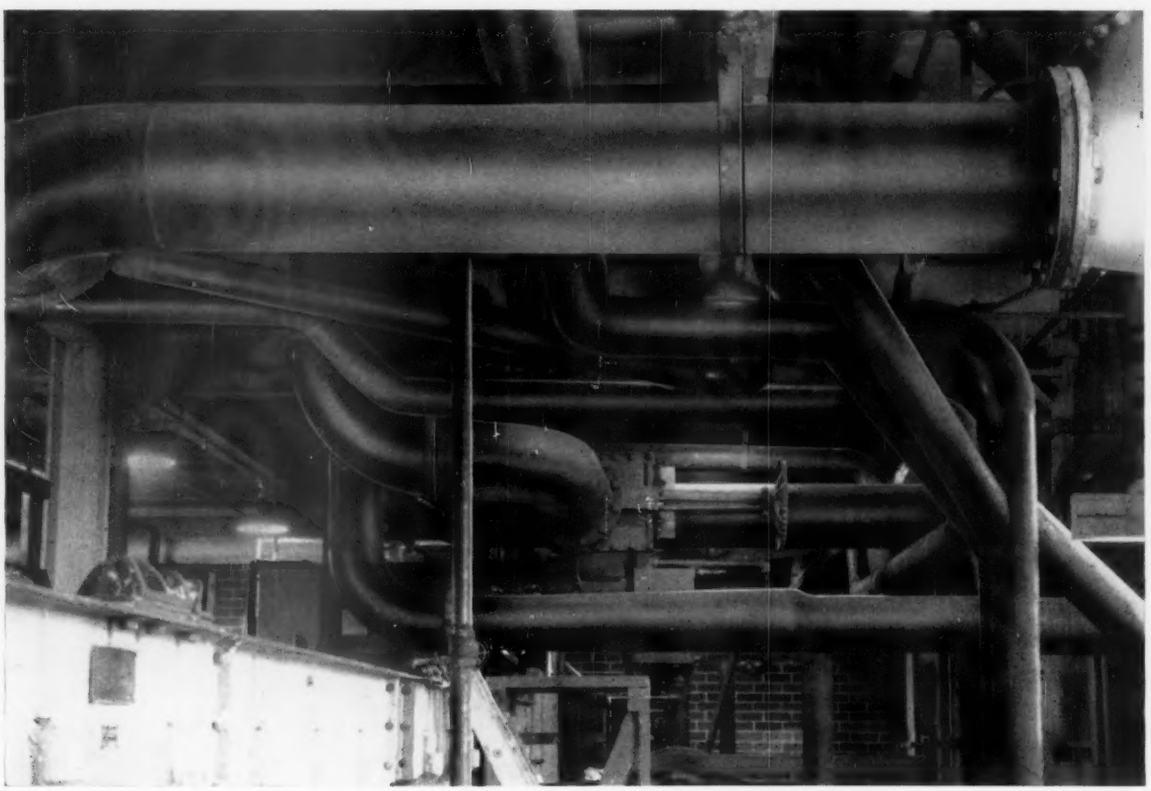
see page 4

PROCESS PIPING

The design of complex piping systems deserves the careful attention of a firm of professional engineers qualified by experience.

HUDSON PULP & PAPER COMPANY, PALATKA, FLORIDA

One of a series highlighting the Engineer's contribution to industrial progress.



Engineers for 55 Years

J. E. SIRRINE COMPANY
GREENVILLE • SOUTH CAROLINA

A DEPARTMENTALIZED ENGINEERING ORGANIZATION SERVING BUSINESS, COMMERCE AND INDUSTRY

To Rice Barton's 120 years of reputable service to the paper industry has been added the 120 years of supercalender design and manufacturing experience of Joseph Eck and Sons. This combination has produced, in the Rice Barton-Eck Supercalender, the most modern supercalender available today.

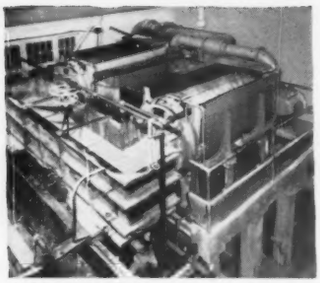
Open frame construction, faster roll changes, perfect alignment of rolls regardless of diameter, elevators, hydropneumatic pressure systems, and built-in cranes, are but a few of the advanced features which have already caused six of America's leading paper mills to order Rice Barton-Eck Supercalenders.

RICE BARTON CORPORATION

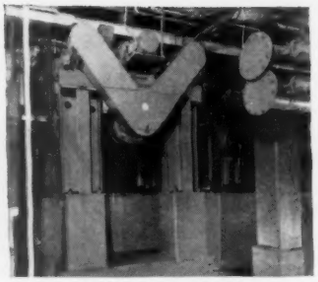
Worcester, Massachusetts

Paper Machine Builders Since 1837

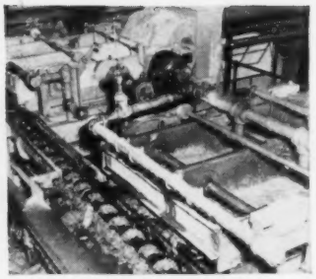
West Coast Distributor: **Ray Smythe . . .** 511 Park Building • Portland, Oregon



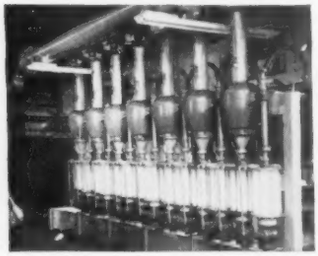
BIRD SCREENS—standard throughout the papermaking world — the dependable final barrier to dirt that hurts paper quality, damages machine wires and rolls.



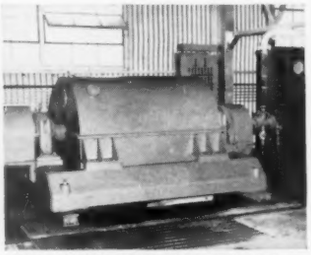
BIRD VIBROTOR SCREENS provide high capacity, slotted plates screening of high consistency pulp, paper, board and deink stocks, in small space at low cost per ton.



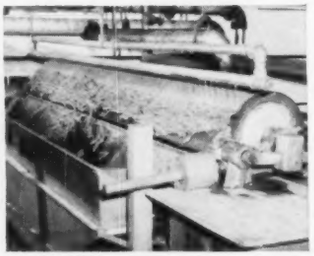
BIRD JONSSON SCREENS do big volume perforate plate knotting and screening with high screening efficiency and low loss of fibre in rejects at low HP.



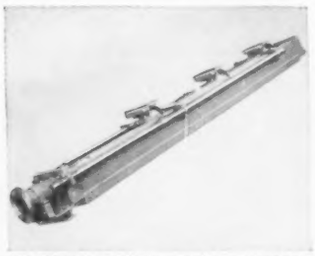
DIRTECS remove heavy and fine dirt from pulp or paper stocks swiftly and surely; in regular or "king" size; may be equipped with automatic dirt evacuators.



BIRD LIME MUD FILTERS deliver uniformly dried kiln feed, greatly increasing kiln operating efficiency and economy.



BIRD SAVE-ALLS recover valuable papermaking fibres from white water at lowest cost per ton. Save stock, filler, color, water, time and labor.

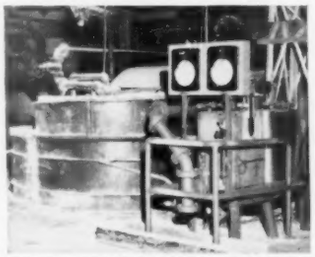


VICKERY WET FELT CONDITIONERS keep cylinder machine top and bottom felts continuously clean; no slowing down for clogged felts; felts last longer.

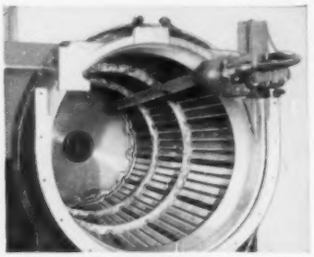
VICKERY FELT CONDITIONERS keep press felts continuously clean, fresh and absorbent without mid-week shutdowns. Designed for today's fast-running felts.

VICKERY DOCTORS assure continuously effective roll performance with low roll maintenance expense. Designed for quick blade change, oscillation and air lift, as desired.

BIRD CENTRIFINERS, the accepted means of removing fine dirt, rubber or metal particles from photographic, condenser, glassine, cigarette or other special papers.



BIRD CONSISTENCY REGULATORS maintain exact stock consistency 24 hours a day. Air-operated type provides continuous chart record. Mechanically operated type also available.



BIRD SHOWER PIPES assure high scouring efficiency with low water consumption. Bird Oscillating Shower Pipes are standard for Bird Screens.

BIRD

BIRD CENTRIFFLERS replace space consuming riffflers; take stock from pulpers, diluted to about 1½% and deliver up to 1500 gpm of cleaned stock. *No moving parts.*

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July 10, 1957

PULP & PAPER

VOLUME 31
NUMBER 8

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370 Lexington Ave.
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Atlanta 19, Ga.—2900 Winding Lane, N.E., ME 6-2385

Cleveland 3, Ohio—4500 Euclid Ave. EXpress 1-4180

Seattle 4, Wash.—71 Columbia St., MA 1626

Vancouver 3, Can.—402 Pender St., W., MA 7287

Portland 4, Ore.—534 SW 3rd Ave., CA 3-6348

San Francisco 5, Calif.—500 Howard St., EX 7-1881

Los Angeles 65, Calif.—3501 Eagle Rock Blvd., CL 5-7194

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CIRCULATION DEPT., 500 Howard St., San Francisco 5, Calif. C. C. Baake, Circ. Mgr. Send subscription orders and changes of address to PULP & PAPER, above address. Include both old and new addresses.

RATES (including World Review Number): U.S., Canada and Latin America—1 yr., $4; 2 yrs., $6; 3 yrs., $8. Other countries—1 yr., $5; 2 yrs., $8; 3 yrs., $11. Sterling area orders may be sent to: Harold P. deLooze Ltd., 864 Wilmslow Rd., E. Didsbury, Manchester 20, England.

PULP & PAPER is published monthly, except July when publication is semi-monthly, at Bristol, Conn., by Miller Freeman Publications, Incorporated. Entered as second class matter, Dec. 4, 1951, at Post Office, Bristol, Conn., under Act of March 3, 1879.

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Free World vs. Communist Bloc in Pulp and Paper

Statistics gathered by PULP & PAPER from 90 nations and territories

	Population	Per Capita Consumption of Paper in 1956	Pulp Production (in short tons) 1954	1955	1956	Paper and Paperboard Production (in short tons) 1954	1955	1956
All Free World	1,777,271,000	69.7 lbs.	42,627,036	46,623,062	49,691,758	52,564,238	59,322,642	61,978,589
°Communist Bloc	911,729,000	12.9 lbs.	3,786,800	4,248,000	4,681,000	4,448,200	5,333,100	5,865,190
Total	2,689,000,000	50.4 lbs.	46,413,836	50,871,062	54,372,758	57,012,438	64,655,742	67,843,779

°Included in Communist "bloc" are Russia, East Germany, Poland, Czechoslovakia, Rumania, Hungary, Bulgaria, Red China, North Korea and Red Indochina. Communist Yugoslavia is included in "Free World" figures because of its independence in international affairs.

How Nations Rank in Paper Consumption Per Person

Latest 1956 statistics gathered from 90 nations and territories by PULP & PAPER

Communist "bloc" nations are in italics. Communist Yugoslavia is not included in the "bloc."

	Population (1956)	Per Capita Consumption in lbs. (1956)
1. United States	168,091,000	432
2. Canada	15,861,000	280
3. Sweden	7,310,000	208
4. Britain	51,208,000	180
5. Switzerland	5,000,000	163
6. Norway	3,450,000	159
7. Australia	9,533,334	156
8. Denmark	4,500,000	154
9. New Zealand	2,180,000	141
10. Finland	4,300,000	131
11. West Germany	52,799,000	128
12. Netherlands	11,000,000	117
13. Belgium	8,915,000	110
14. France	43,200,000	106
15. Iceland	166,000	93
16. East Germany	*17,600,000*	82
17. Ireland	2,909,000	81
18. Poland	*27,500,000*	76
19. Czechoslovakia	*13,000,000*	74
20. Austria	7,100,000	72
21. Cuba	5,600,000	69
22. Japan	90,397,000	60.1
23. Israel	1,850,000	53
24. South Africa	13,400,000	51
25. Uruguay	2,700,000	47.7
26. Argentina	19,500,000	43
27. Italy	48,200,000	43
28. Hong Kong	2,260,000	42.5
29. Rumania	*17,300,000*	37
30. British Honduras	73,171	33.7
31. British Guiana	465,416	26
32. Mexico	32,000,000	26
33. Russia	*200,200,000*	*24.4*
34. Chile	6,774,000	24
35. Hungary	*10,000,000*	24
36. Bulgaria	*7,629,254*	22
37. Panama	910,000	20.2
38. Cyprus	510,000	20
39. Brazil	58,456,000	19
40. Spain	29,202,776	19
41. Greece	8,500,000	17
42. Portugal	8,765,000	17
43. Yugoslavia	17,676,000	15
44. Costa Rica	951,000	14.2
45. Taiwan	10,238,086	14.2
46. Colombia	12,657,000	12
47. Brit. Caribbean Fed.	2,921,000	10
48. Egypt	23,240,000	10
49. Puerto Rico	2,210,703	10
50. Venezuela	6,533,000	9.6
51. El Salvador	2,193,000	8.3
52. Guatemala	3,300,000	8
53. Philippines	22,000,000	8
54. Nicaragua	1,245,000	7.8
55. Turkey	24,111,778	7.7
56. Peru	9,396,000	7
57. Ecuador	3,570,000	6.9
58. Algeria	10,400,000	6
59. Morocco	8,004,000	6
60. Tunisia	3,700,000	6
61. Ceylon	8,000,000	5
62. Dominican Rep.	2,653,481	5
63. Ghana	4,250,000	5
64. Liberia	2,000,000	5
65. Libya	1,500,000	5
66. South Korea	21,526,000	5
67. Honduras	1,660,000	4.1
68. Haiti	3,305,000	4
69. Jordan	1,402,800	3.7
70. Paraguay	1,565,000	3.6
71. Indonesia	82,450,000	3.5
72. Cambodia	4,073,967	3.4
73. Red China	*602,000,000*	3.3
74. Belgian Congo	16,800,000	3
75. Bolivia	3,198,000	3
76. Dutch-French Guianas	269,000	3
77. Iran	18,944,821	2.2
78. Thailand	20,300,000	2.2
79. Central African Fed.	6,900,000	2
80. India	380,000,000	2
81. North Korea	*4,500,000*	2
82. Pakistan	80,000,000	2
83. Rest of Middle East	37,878,621	2
84. Sudan	9,000,000	2
85. Burma	20,000,000	1.5
86. French West Africa	18,747,000	1.5
87. Red Indochina	*12,000,000*	*0.7*
88. Ethiopia	19,500,000	0.5
89. Rest of Africa	70,000,000	0.5
90. Rest of Asia	30,000,000	0.5
TOTAL	2,689,000,000	50.4

PULP & PAPER

'ROUND THE WORLD . . .

(Copyrighted by PULP & PAPER, 1957)

PULP & PAPER Survey Shows–

World Record 67,844,000 Tons in 1956

Our Cover Picture–

Is More Than Just a Reading Lesson

• Our WORLD REVIEW cover is also a lesson for the pulp, paper and paperboard industries, too.

It graphically brings home to PULP & PAPER readers the vast future potential demand for their products in all corners of the world.

Only six out of 10 persons are literate in the world today, says the United Nations. In Africa, where the cover picture was taken, only two out of 10 are literate. In Asia the ratio is only four out of 10. In North America and Europe (including European Russia) the ratio is nine out of 10. In South America, it is six out of 10.

Our cover picture shows children in Nigeria learning to read the Koran. In their part of Africa, the per capita consumption of paper and paperboard is now only one-half a pound per year.

This 1957 WORLD REVIEW cover picture was provided to PULP & PAPER by the United Nations. UN representatives and local governments are collaborating in launching literacy campaigns in backward areas throughout the world—campaigns which will have an important influence in increasing paper and paperboard demand.

"EACH ONE TEACH ONE" . . . This is the slogan of such a campaign in Mexico, where the Mexican government is energetically promoting it.

All Nations Producing Paper – How They Rank

Production of paper, paperboard and fiberboard in short tons of 2,000 lbs.

All Communist "bloc" nations in italics. Communist Yugoslavia is not included in "bloc."

	1954	1955	1956
1. United States	26,656,631	30,140,190	31,335,853
2. Canada	6,753,398	8,000,213	8,504,448
3. Britain	3,391,000	3,633,440	3,618,266
4. West Germany	2,537,088	2,766,438	2,955,438
5. Japan	2,118,711	2,429,064	2,830,885
6. Russia	*2,000,000*	*2,200,000*	*2,360,000*
7. France	1,778,600	1,972,850	2,139,530
8. Sweden	1,536,000	1,643,000	1,733,000
9. Finland	1,215,000	1,434,000	1,684,000
10. Red China	*520,000*	*878,900*	*1,028,500*
11. Italy	812,184	896,796	1,023,080
12. Netherlands	820,000	841,602	853,500
13. Poland	*687,000*	*720,000*	*850,000*
14. East Germany	*630,000*	*680,000*	*720,000*
15. Norway	625,900	656,040	650,654
16. Austria	486,906	529,710	556,498
17. Czechoslovakia	*317,000*	*460,000*	*485,000*
18. Australia	330,000	366,000	425,600
19. Switzerland	341,000	380,000	407,000
20. Brazil	345,520	366,450	377,500
21. Belgium	334,932	351,330	369,437
22. Mexico	207,000	274,000	346,000
23. Argentina	251,511	305,538	289,332
24. Spain	249,250	256,740	286,880
25. Rumania	*198,000*	*218,000*	*230,000*
26. India	139,795	207,071	216,609
27. Denmark	138,000	155,000	160,000
28. South Africa	85,000	115,000	130,000
29. Yugoslavia	73,195	79,188	128,468
30. New Zealand	45,106	64,264	121,262
31. Hungary	*60,000*	*110,000*	*120,000*
32. Portugal	48,700	55,300	81,000
33. Cuba	37,300	40,000	80,000
34. Ireland	42,620	82,720	70,900
35. Rest of North Africa	60,000	66,000	70,000
36. Taiwan	47,604	56,791	67,594
37. Bulgaria	*30,000*	*60,000*	*65,990*
38. Chile	57,187	60,627	59,436
39. Greece	30,000	46,000	50,000
40. Turkey	38,500	49,500	50,000
41. Colombia	25,000	36,400	46,000
42. Hawaii	40,000	40,000	40,000
43. Uruguay	35,000	35,000	38,500
44. Peru	27,500	29,820	36,000
45. Puerto Rico	22,000	24,000	24,000
46. Egypt	19,910	23,000	22,000
47. Philippines	10,600	16,000	20,000
48. Israel	8,250	16,500	18,150
49. Venezuela	8,800	11,000	13,200
50. Rest of Middle East	10,000	10,000	10,000
51. South Korea	5,000	7,000	10,000
52. Central African Fed.	7,000	7,000	7,000
53. Indonesia	7,000	7,000	7,000
54. North Korea	*5,000*	*5,000*	*5,000*
55. Rest of Africa	5,000	5,000	5,000
56. Thailand	3,000	4,000	4,000
57. Costa Rica	3,000	3,000	3,000
58. Iran	2,500	2,500	2,866
59. Red Indochina	*1,200*	*1,200*	*1,200*
60. Ecuador	400	350	1,000
61. Libya	1,000	1,000	1,000
62. Guatemala	500	700	900
63. Bolivia	800	800	800
64. Paraguay	450	480	480
65. El Salvador		300	300
66. Ghana	300	300	300
67. Ethiopia	200	200	237
68. Ceylon	200	200	220
69. Cambodia	100	132	110
70. Dominican Rep.	90	98	100
Total	**57,012,438**	**64,655,742**	**67,843,779**

Russia is conducting a major campaign to increase literacy. Similar campaigns in Africa and India and other regions promise to have a tremendous effect on changing ridiculously low per capita consumption figures.

PER CAPITA CONTRASTS . . . Note the contrasts in the new up-to-date figures gathered by PULP & PAPER on per capita consumption—the U.S.A. leads with 432 lbs. in 1956. This is more than twice that of Sweden, No. 3 nation, four times France and Belgium, which are down in 13th and 14th place.

It is significant that in the Communist bloc of countries, the highest is East Germany, yet it is only 16th, with 82 lbs. Soviet Russia's 24.4 lbs. ranks it 33rd, just behind Mexico. Yet their per capita use is about seven times that of Red China. Free China (Taiwan) is 45th, but still enjoys four times the per capita use of Red China.

TOP NATIONS IN PRODUCTION . . . The United States produces nearly half of all the paper and paperboard in the world. More than half is consumed in the U.S.A. Next in order in production—Canada, Britain, West Germany, Japan, Russia, France, Sweden, Finland and Red China (where industrial activity is increasing). In this review, PULP & PAPER has gathered new figures from every nation or territory where paper is made. There are 70 in the list.

United States is still No. 1 nation in pulp production, too, with more than twice the output of No. 2 country, Canada. Britain, West Germany, Japan, Russia, France, Sweden, Finland rank next with Red China just barely squeezing Italy out of tenth place. In this table, it will be noted, PULP & PAPER lists latest figures from every nation that makes any type of virgin pulp—from wood or other fibers—51 nations in all.

FREE VS. RED WORLD . . . Again this WORLD REVIEW reveals a significant measurement of strength between the Free World and the Communist Bloc. It shows their respective per capita consumption of paper and paperboard as 69.7 lbs. as against 12.9 lbs. Inhabitants of the Free World use more than five times as much—indicating literacy and civilization that much in advance of the Communist bloc. The table shows the increase in pulp and paper and paperboard production in the Free World in 1956 was substantially greater than that in the Communist bloc, and total output still was many times as great, too. Independent Yugoslavia was not counted in the Communist bloc, and even if it had been, it would really not change the picture.

WHY THIS WORLD REVIEW IS IMPORTANT . . . This is the fourth successive year that PULP & PAPER has brought together these latest statistics. Here, for the first time, anywhere, are 1956 figures from all producing nations and territories and estimates for all consumers. This is the only REVIEW NUMBER of its kind published anywhere, and its editors share credit with over 70 correspondents in all corners of the globe.

Each year, this REVIEW NUMBER becomes increasingly valuable to management, production, technical, sales and promotion men in this industry. For their companies are increasingly looking to wider and more distant markets. Interchange of information between countries making pulp and paper is becoming more and more important and useful. In fact, many consider it essential to their company's progress.

The world becomes smaller every year. If this WORLD REVIEW NUMBER has helped to make it smaller for pulp and paper people, then it has achieved an important purpose of long term benefit to this industry and the individuals who comprise it.

All Nations Producing Pulp — How They Rank

Production of wood, straw, bagasse, esparto and bamboo pulps in short tons of 2,000 lbs.—All statistics gathered by PULP & PAPER

Communist "bloc" nations are in italics. Communist Yugoslavia is not included in the "bloc."

	1954	1955	1956
1. United States	18,333,153	20,739,696	22,121,285
2. Canada	9,419,538	9,567,414	10,543,016
3. Sweden	3,971,000	4,258,000	4,513,000
4. Finland	2,660,000	3,025,000	3,131,000
5. *Russia*	*2,000,000*	*2,300,000*	*2,530,000*
6. Japan	1,790,895	2,102,705	2,427,195
7. Norway	1,357,000	1,393,409	1,375,000
8. West Germany	1,389,466	1,311,153	1,371,535
9. France	784,300	823,100	900,000
10. *East Germany*	*760,000*	*800,000*	*845,000*
11. Austria	560,927	607,678	631,238
12. *Czechoslovakia*	*460,000*	*500,000*	*530,000*
13. Italy	340,006	388,361	389,639
14. *Poland*	*230,000*	*260,000*	*300,000*
15. *Red China*	*170,000*	*200,000*	*260,000*
16. New Zealand	81,616	111,300	214,300
17. Switzerland	193,000	195,000	209,000
18. Australia	157,400	176,000	207,200
19. Brazil	201,000	203,000	205,000
20. Netherlands	161,000	183,000	191,000
21. *Rumania*	*150,000*	*160,000*	*184,000*
22. Mexico	96,000	148,000	174,000
23. Spain	110,479	129,690	155,010
24. Britain	157,969	155,746	148,684
25. Yugoslavia	69,498	90,349	133,924
26. Belgium	110,660	115,173	117,136
27. South Africa	41,000	75,000	85,000
28. Argentina	58,000	88,000	83,000
29. Portugal	45,000	52,000	65,000
30. India	22,500	39,760	57,120
31. Hawaii	40,000	40,000	40,000
32. Turkey	32,340	38,700	33,028
33. Pakistan	none	15,680	31,360
34. Taiwan	18,538	20,273	22,510
35. Chile	24,408	22,058	22,488
36. Cuba	20,000	20,000	20,000
37. *Hungary*	*8,000*	*18,000*	*20,000*
38. Peru	13,000	13,000	15,000
39. Denmark	4,070	11,000	14,800
40. Puerto Rico	10,000	12,000	12,000
41. Ireland	9,000	12,000	10,000
42. *Bulgaria*	*6,000*	*6,000*	*8,000*
43. Uruguay	6,000	6,000	6,600
44. Philippines	4,573	4,917	5,000
45. Egypt	2,200	3,000	3,000
46. *North Korea*	*2,800*	*3,000*	*3,000*
47. South Korea	2,000	2,600	3,000
48. Thailand	none	3,000	3,000
49. Greece	none	1,210	1,300
50. *Red Indochina*	*none*	*1,000*	*1,000*
51. Guatemala	500	700	900
Total	**46,413,836**	**50,871,062**	**54,372,758**

World-Wide in Scope...

PERSONAL IN RELATIONSHIP

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Havana, Cuba	Brussels, Belgium	Paris, France	Porto, Portugal	Milano, Italy
Tokyo, Japan	La Paz, Bolivia	Athens, Greece	San Juan, Puerto Rico	Norrkoping, Sweden
Beyrouth, Lebanon	Rio de Janeiro, Brazil	Enschede, Holland	Bangkok, Siam	Oslo, Norway
Mexico City, Mexico	Guatemala City, C. A.	Bombay, India	Johannesburg, S. A.	Helsinki, Finland
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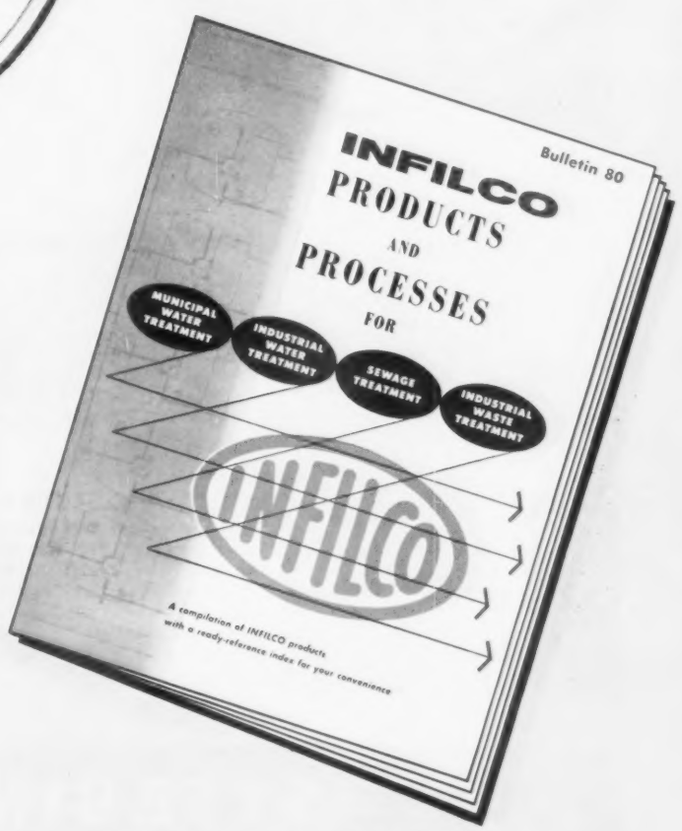

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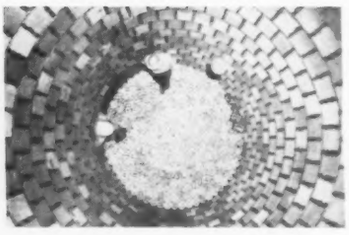

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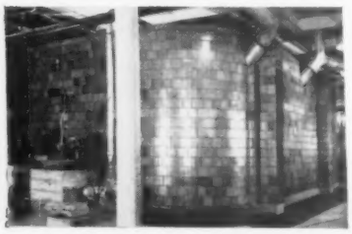
SEMCO and SEMAC Brick are used in vessels subject to severe corrosive effects. High chemical resistance plus superior thermal spall resistance. For digesters, acid accumulators, acid tanks, chlorine dioxide reactors, bleachers, blow pits and primary coolers. Carbon Brick, Fire Brick and Insulating Brick also used as required.



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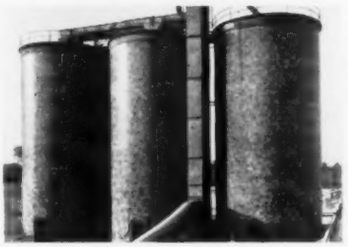
Stebbins storage tanks are, in effect, reinforced concrete faced inside and out with vitrified tile. Wide variety of contours and sizes. Walls are designed to carry the fully hydrostatic head in accordance with accepted concrete design. High-density storage tanks, machine chests, clay slurry chests, etc.



TILE SILOS

Silos for storage of dry solids are built of SEMTILE or SEMBLOK, or combinations of the two, depending upon the size, location and physical characteristics of the material. Material-handling equipment may be carried on the reinforced tile structure.

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No. 165

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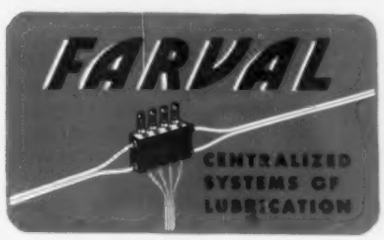

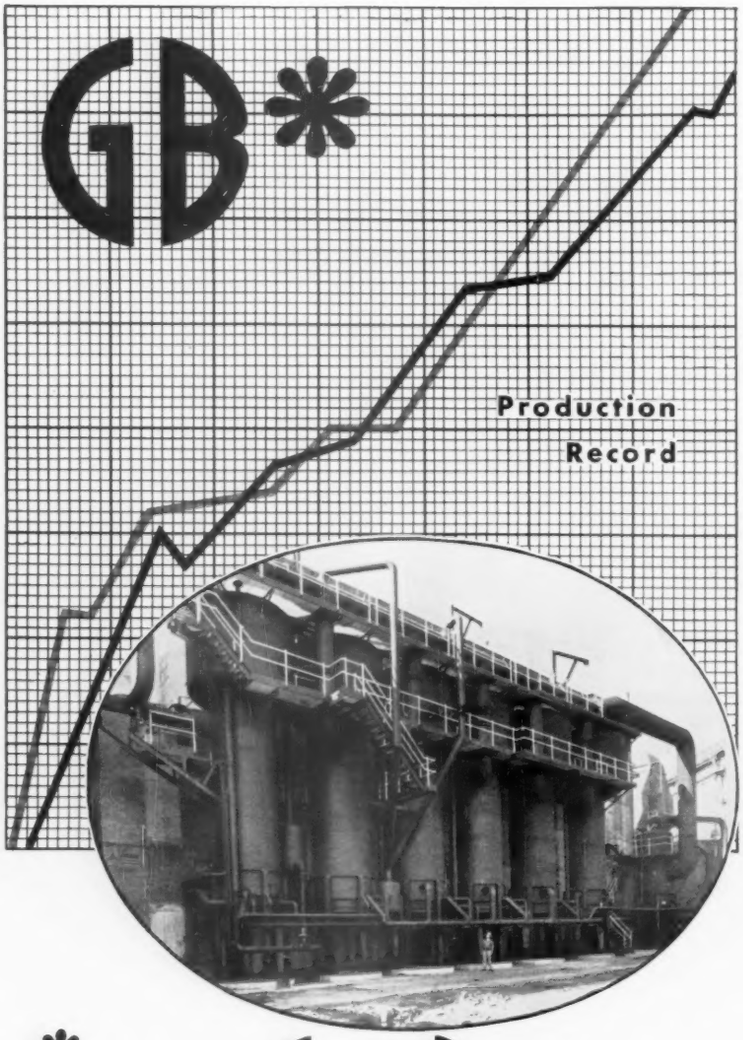

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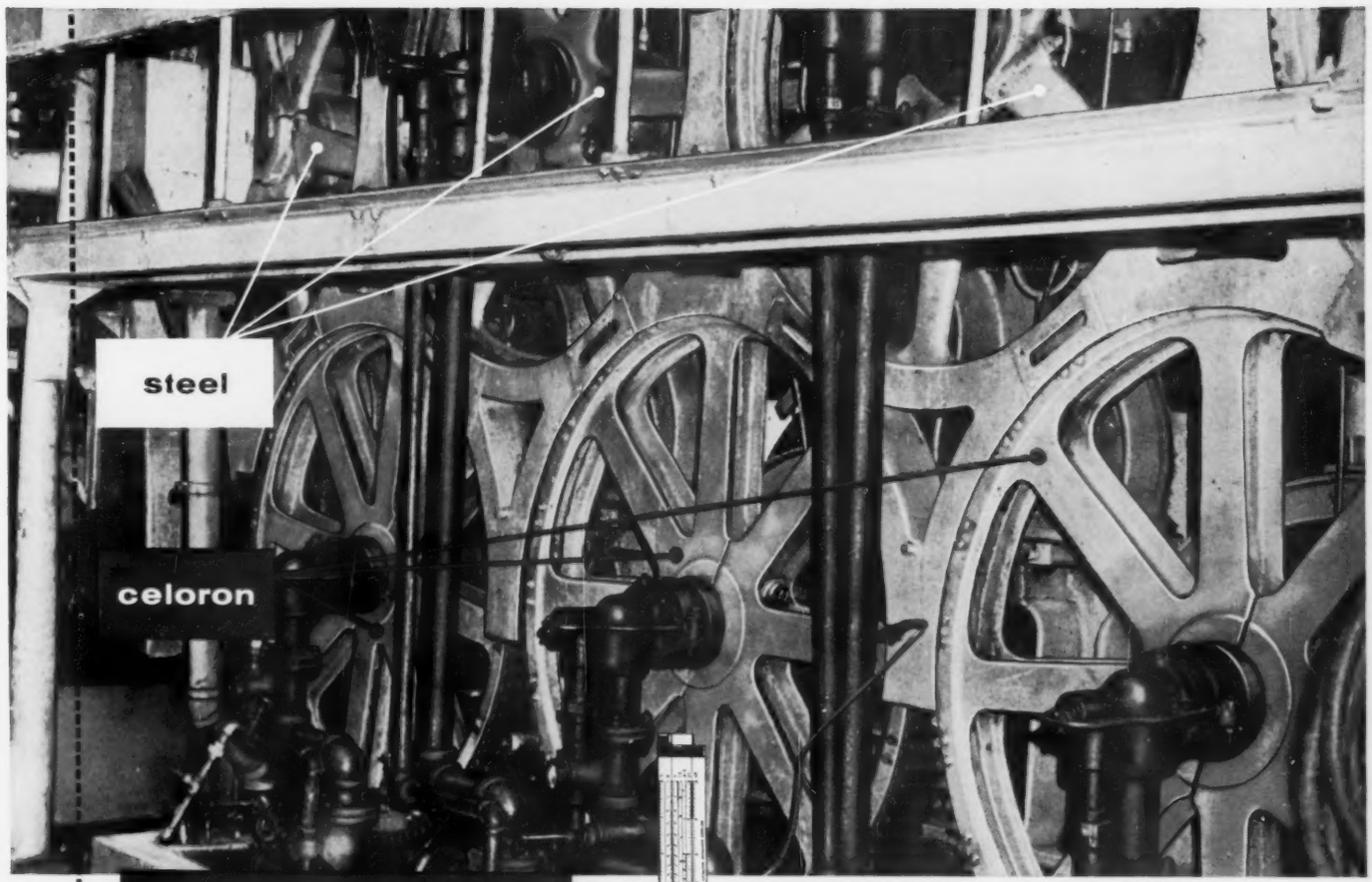
Crown Zellerbach Corp.
Gulf States Paper Corp.
Fibreboard Products, Inc.
Crossett Paper Mills
Riegel Paper Corp.
Mead Corporation
St. Joe Paper Co.
St. Regis Paper Co.
Union Bag & Paper Co.
Bowaters Southern Paper
Continental Can Co.
New York & Pennsylvania Co.
East Texas Pulp & Paper
Halifax Paper Co.
Southern Advance Bag
West Virginia Pulp & Paper
Dierke Paper Company
Eastern Corporation



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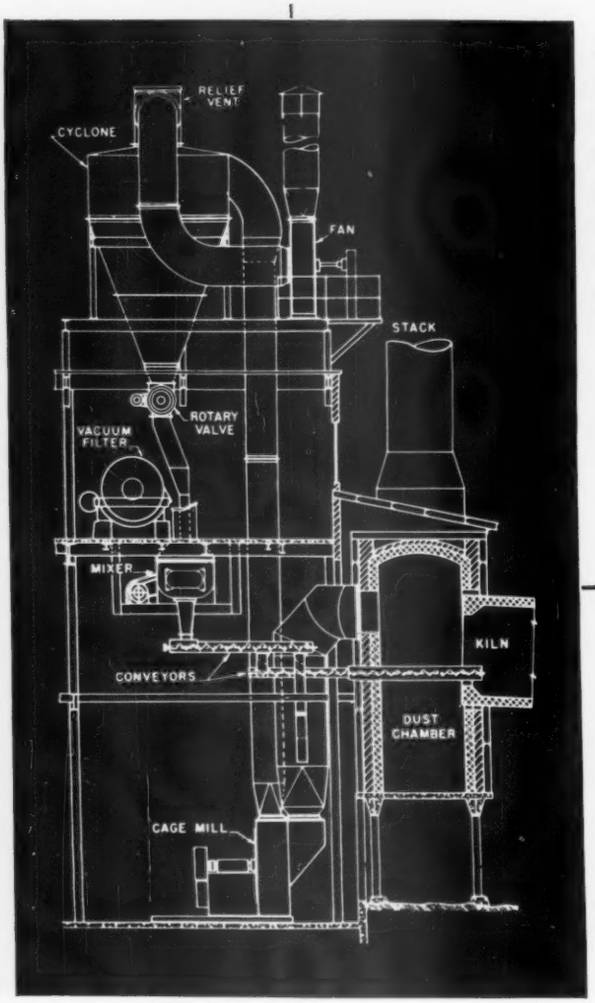

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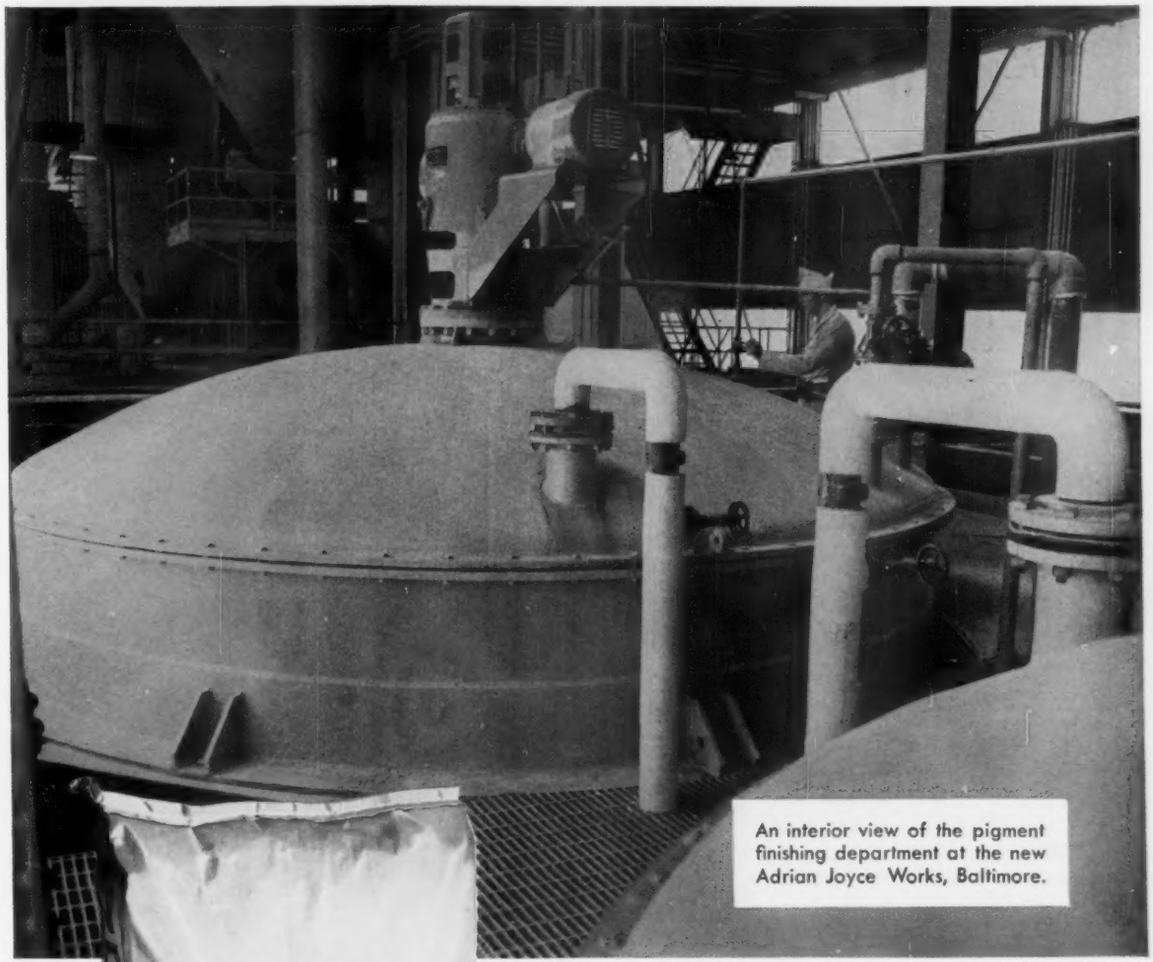

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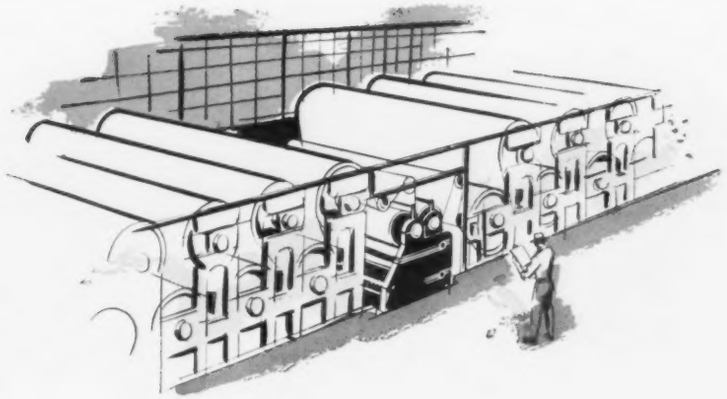
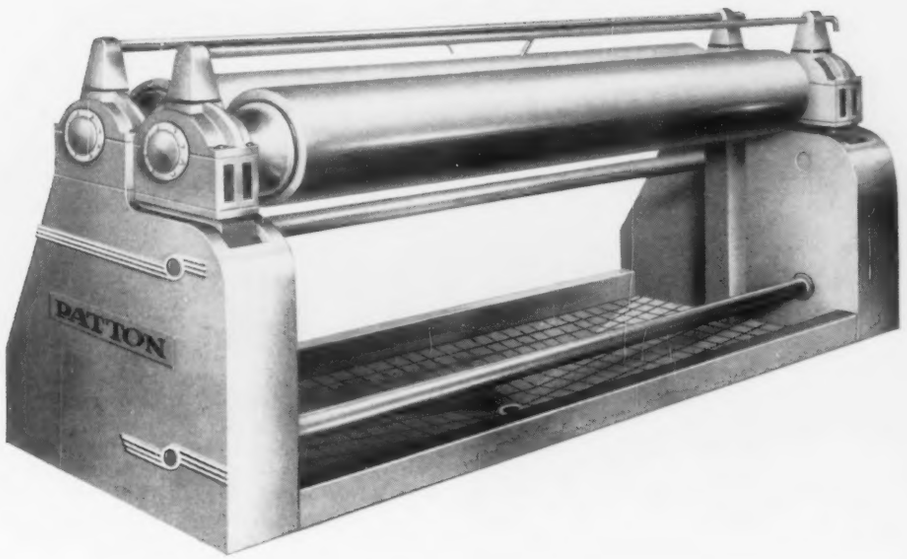
*TITANOX is a registered trademark for the full line of titanium pigments offered by Titanium Pigment Corporation.



HORIZONTAL SIZE PRESS

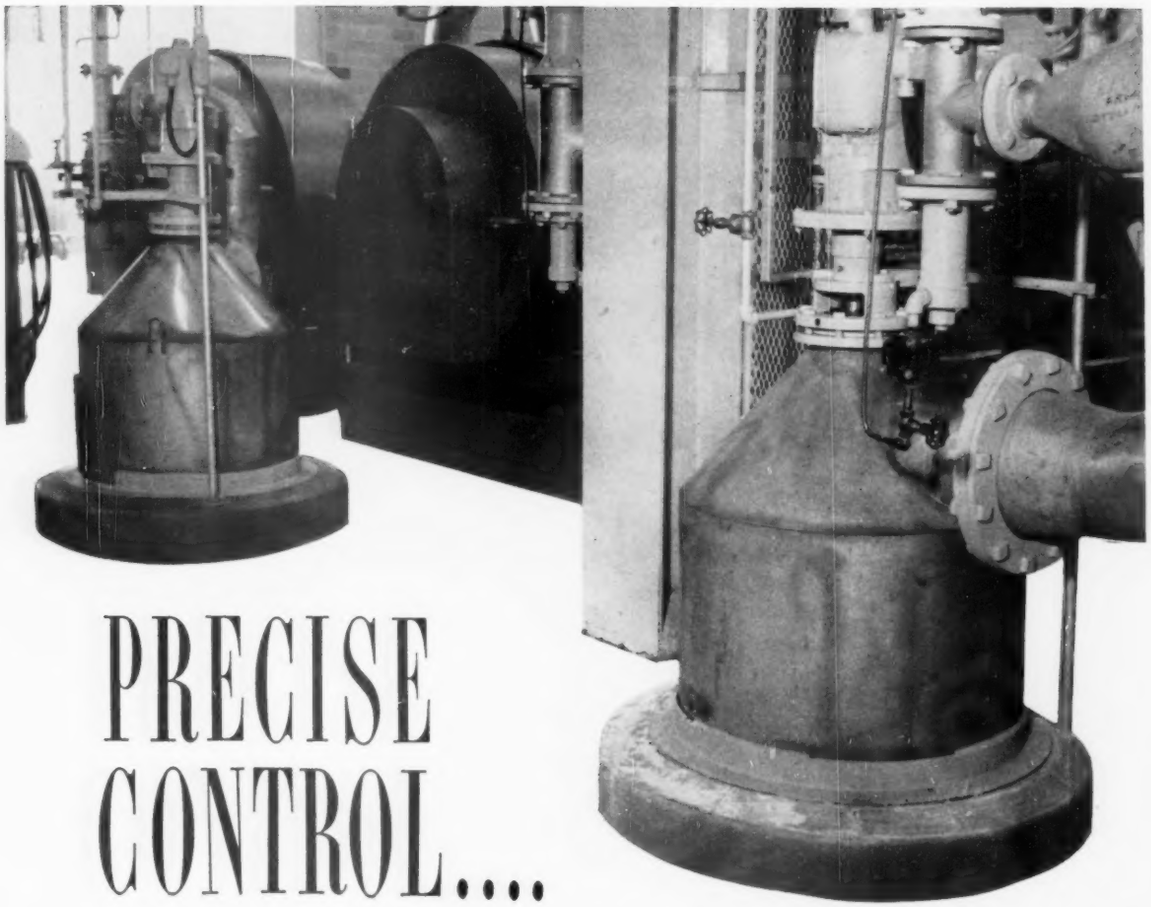


by **PATTON**

THE PATTON MANUFACTURING CO., INC. • SPRINGFIELD, OHIO

CH. ENG'R. CHARLES E. HILL

SALES MGR. WAYNE T. CRANNELL



PRECISE CONTROL....

AT P. H. GLATFELTER CO.

DeZurik CONSISTENCY REGULATORS ARE A PART OF A MODERN APPROACH TO BOOK PAPER PRODUCTION

Applying modern techniques and equipment, P. H. Glatfelter Company has pioneered in book paper production with a major departure from common practices. One of the things that *didn't* change, however, was the specification of DeZurik Consistency Regulators. Their installation represents the care Glatfelter exercised in the choice of equipment, for these modern regulators afford the precision control that is vital to the process. They're guaranteed to hold consistency within plus or minus .1% (with many of them operating within plus or minus .02%!) And they continue to operate despite spattering stock—without constant attention—furnishing a complete 24-hour record of incoming and outgoing stock. Wherever accuracy and dependability are necessary on stock consistency control, you'll find DeZurik regulators. Write for more details.

DeZURIK CORPORATION
SARTELL, MINNESOTA.

Try the 2 New . . . All New

HOMELITE CHAIN SAWS

6 Horsepower "Power Twins"

Take your pick! One of these two new Homelite Power Twins will do your woodcutting jobs faster, easier, more profitably.

Here's power . . . 6 full, hard-hitting horsepower . . . to make even the toughest cutting jobs a cinch. *Here's light weight* . . . the lightest 6 horsepower chain saws in the world — for easier handling and more production with less effort. *Here's low-cost dependable operation.* Homelite's new short-stroke, high-compression engine minimizes wear and assures less down time, lower maintenance costs, longer chain saw life. Both "Power Twins" cut left, right, up, down, upside down to handle any type of job. Try *each* of the "Power Twins" and choose the one that's right for you.

6 Horsepower 22 Pounds

GEAR DRIVE

Top Production. Rugged 6 horsepower engine with gear drive gives you the lugging power to bring down the largest, toughest trees faster and easier. Built for hard, everyday use, the 6-22 is a real production cutter's tool.

More Profitable Cutting. This smooth-operating Homelite brings down time *down*. You get longer engine life, spend less time out-of-the-woods for maintenance and repairs . . . less time refueling the big new gas tank. You cut more efficiently for more profitable cutting.

Money-Saving Attachments. The Homelite 6-22 is the newest one man chain saw that has plunge-cut bow, brush cutter, and clearing attachments available. You can make a quick switch and be ready in seconds for any type of cutting.

Cuts through 20 inch trees in 18 seconds. Brings down trees up to 7 feet in diameter.

6 Horsepower 19 Pounds

DIRECT DRIVE

Easiest Handling. The EZ-6 weighs only 19 pounds — with every ounce perfectly balanced. Built for rugged professional use, this fast cutting 6 horsepower chain saw is extremely easy to handle — even an amateur can operate it with little strain or effort.

Fastest Cutting. This direct drive chain saw, with its fast chain speed and light weight, makes quick work of trees up to 5 feet in diameter. Packed with 6 full horsepower, it cuts 8" oak in 4 seconds, 18" pine in 12 seconds.

A Profitable Investment. The low-cost EZ-6 starts to pay for itself the first time you use it. Turns woodlots into big cash crops . . . cuts timber, pulpwood, fence posts, cordwood. This high speed direct drive chain saw has enough dependable power to make either full or part-time cutting profitable.

Cuts 8" hardwood in 4 seconds
Cuts 18" softwood in 12 seconds
Fells trees up to 5 feet in diameter

Homelite builds and sells more chain saws than any other company in the world.

WIN
A FREE CHAIN SAW EVERY YEAR FOR LIFE
IT'S EASY
Nothing to Buy
Nothing to Write
No Obligation

Just visit your Homelite dealer and have a free demonstration of the Homelite Power Twins. You may have *three* chances to win!

1. A free Homelite chain saw of your choice every year for life, or
2. One of 25 Homelite chain saws given away by Homelite District Offices.
3. Plus hundreds of Homelite Chain Saws given free by Homelite dealers in local contests.

Register Now! This promotion is limited to residents of the United States and is subject to local state, city and county laws.

Find Your Homelite Dealer in The "Yellow Pages"

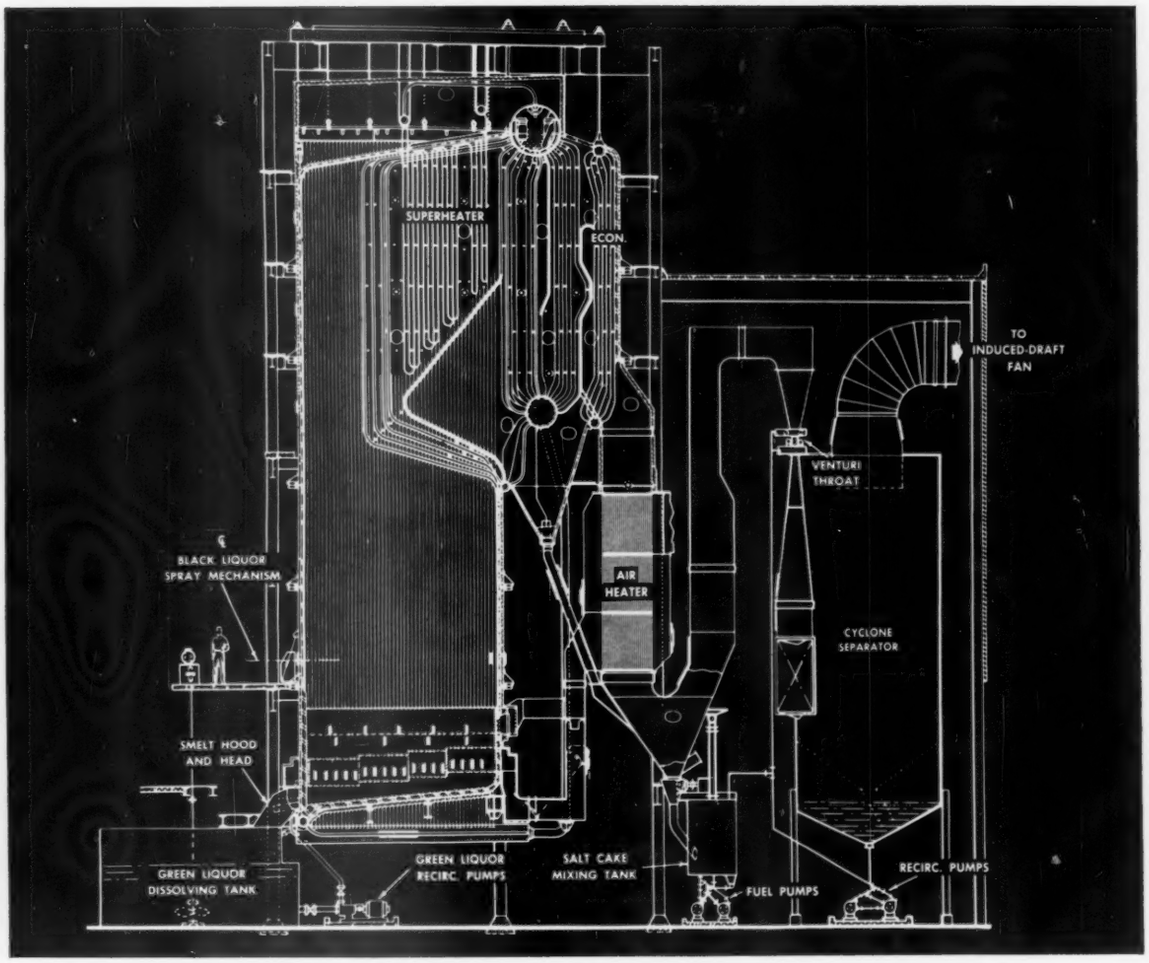
HOMELITE

A DIVISION OF TEXTRON INC

7707 RIVERDALE AVENUE · PORT CHESTER, NEW YORK

Manufacturers of carryable pumps, generators, chain saws, blowers

A complete line of chain saws for every cutting job.



In Pulp and Paper Mills Throughout the World...

B&W Design Provides Maximum Chemical and Heat Recovery

B&W-designed recovery equipment has gained worldwide recognition and acceptance for maximum efficiency in chemical and heat recovery. Installations in Japan, Alaska, Finland, Mexico, Sweden, India, Australia, and South Africa—as well as the United States—are being used today in alkaline, acid, and semi-chemical processes.

Cleaner Recovery Unit—Conservative furnace design and the B&W Nose Baffle assure complete combustion within the furnace thereby reducing the gas temperature in the boiler below the melting temperature of the ash in the flue gas. These features minimize fouling and simplify cleaning. Unscheduled outages for removal of deposits are completely eliminated.

Venturi Evaporator—Scrubber is an important addition to B&W Black-Liquor Recovery Units. It combines both the concentration of black-liquor and collection of salt cake fume. Low in first cost, it increases overall thermal efficiency, requires minimum space, reduces multiple effect evaporator load, and gives continuous high, fume collection efficiency.

Wherever your mill is located, B&W engineers can recommend the right combination of equipment for the most efficient recovery system. The Babcock & Wilcox Company, Boiler Division, 161 East 42nd Street, New York 17, N. Y.

P-807

BABCOCK & WILCOX

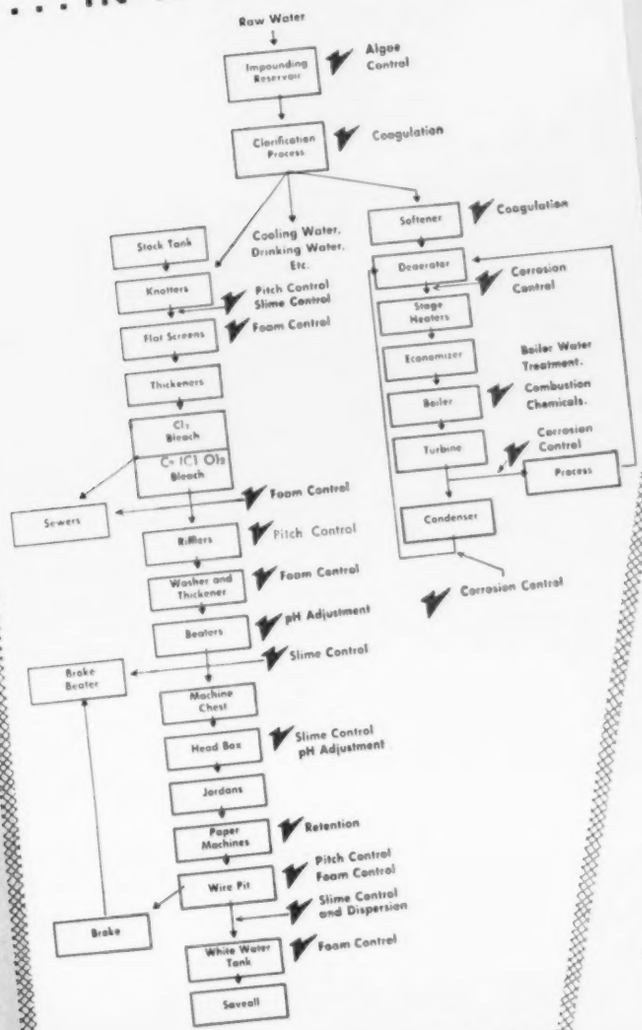
BOILER DIVISION

HERE IS THE

COMPLETE *Nalco* PROGRAM

for Better Products at Lower Cost

. . . IN A TYPICAL MILL



NALCO has the *widest variety* of formulas to assure results in your mill, too. Here are some examples . . . representative Nalco products listed under headings which indicate the job they do. And the chart at left tells you where they are used. Your Nalco Representative will tell you more about them — or write direct to Nalco.

ALGAE CONTROL
Nalco Cuprose
Nalco 21-S
Nalco 201
Nalco 234
Nalco 236
Nalco 237

COAGULATION
Nalco 600
Nalco 650
Nalco 680

COMBUSTION CHEMICALS
Nalco 155
Nalco 156
Nalco 156-C

FOAM CONTROL
Nalco 71
Nalco 71-B
Nalco 71-C
Nalco 71-D5
Nalco 71-K
Nalco 72

CORROSION CONTROL
Nalco 19
Nalco 35
Nalco 353
Nalco 918

pH ADJUSTMENT
Nalco 680

PITCH CONTROL
Nalco 818

RETENTION AND CLARIFICATION
Nalco 600
Nalco 650
Nalco 680

SLIME CONTROL AND DISPERSION
Nalco 21-S
Nalco 21-M
Nalco 201
Nalco 234
Nalco 236
Nalco 237

BOILER WATER TREATMENT
Nalco 75
Nalco 718
Nalco 728
Nalco 752

NATIONAL ALUMINATE CORPORATION
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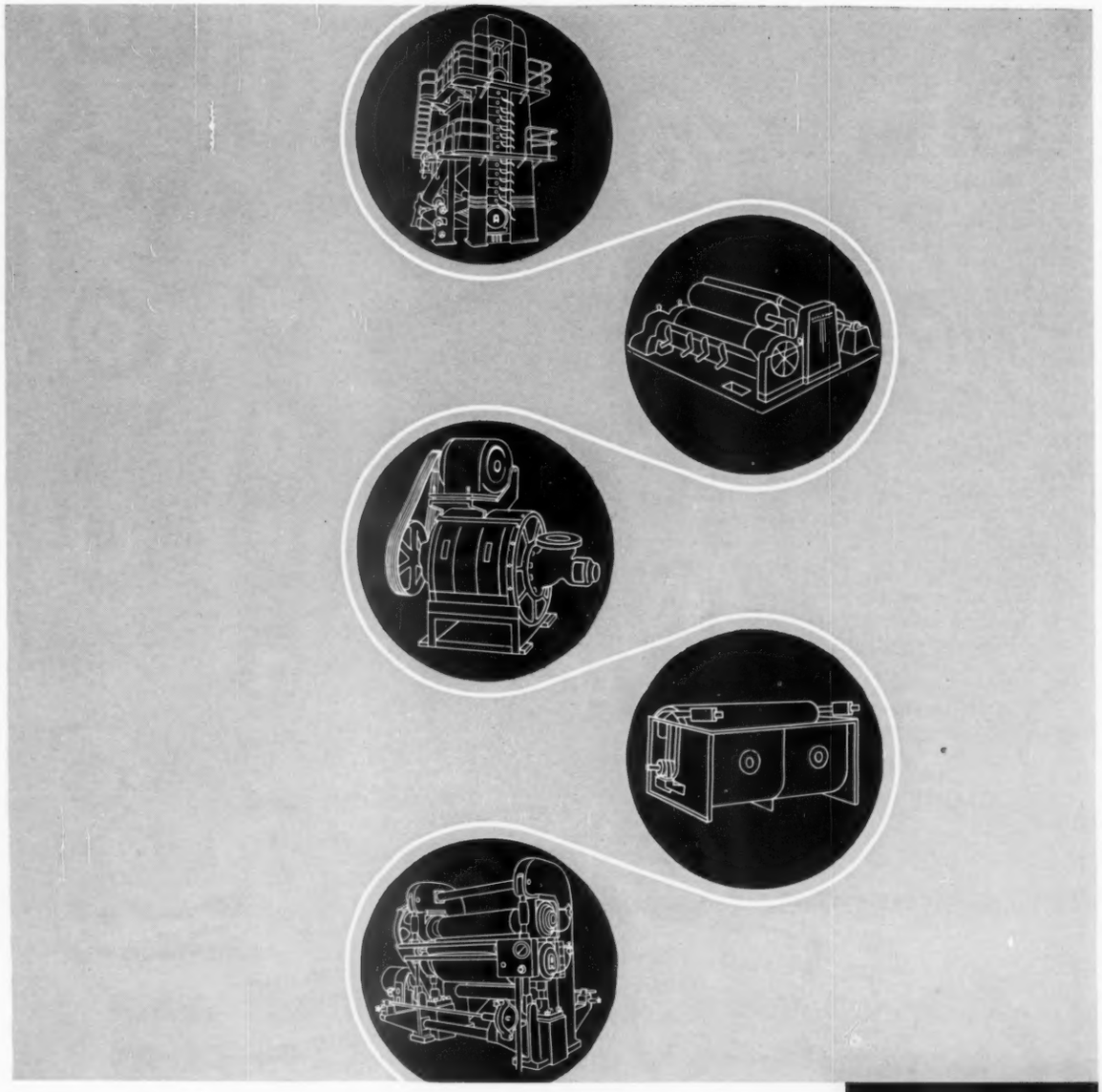
THE *Nalco*®
SYSTEM . . . Serving the Paper Industry
through Practical Applied Science



knowing and filling the needs
of the paper industry

APPLETON MACHINE COMPANY

Appleton, Wisconsin

Supercalenders, winders, rotary screens and gravity deckers, textile calenders, machine calenders, calender rolls, Cram Dryer Drainage System.

They packed up turbine oil worries at Alton Box Board

six turbines use NONPAREIL Turbine Oil, have life-of-turbine guarantee

Six NONPAREIL Turbine Oil guarantee certificates on the turbine room wall are pointed out by M. D. Jones, Superintendent of the Power and Steam Department. Standard Oil Company's lubrication engineer, W. P. "Sandy" Wehking, helped put most of the certificates there.

Alton Box Board Company, Alton, Illinois, doesn't have a worry in the world about turbine oil. The Company has six turbines in service—four in the power plant and two in the paper mill—all using NONPAREIL Turbine Oil. Why no worries? Because each of these fills of turbine oil is *guaranteed for the life of the turbine* not to exceed a neutralization number above 0.15 mg. KOH/g.

The five Westinghouse and one G-E turbine oil fills have demonstrated a remarkable low acidity record over the years. Regular inspection by Standard Oil technical service representatives and analysis of oil samples by the Standard Oil Research Laboratory, Whiting, Indiana, makes sure the oil is performing in accordance with the guarantee. At Alton Box, neutralization number of the oil has been running 0.02 to 0.03 mg. KOH/g.

This is what such service from a turbine oil means to Alton Box Board: They can run one of the largest board mills in the world without having to concern themselves with the performance of the turbine oil they are using. Standard Oil technical service men inspect the system. The oil is sampled and analyzed regularly. Plant operation will never be interrupted because of turbine oil lubrication failure.

The same performance from NONPAREIL Turbine Oil and service from Standard Oil awaits you. Find out. Call your nearby Standard Oil office near you in any of the 15 Midwest and Rocky Mountain states. Or write Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

How NONPAREIL Turbine Oil is performing at Alton Box Board

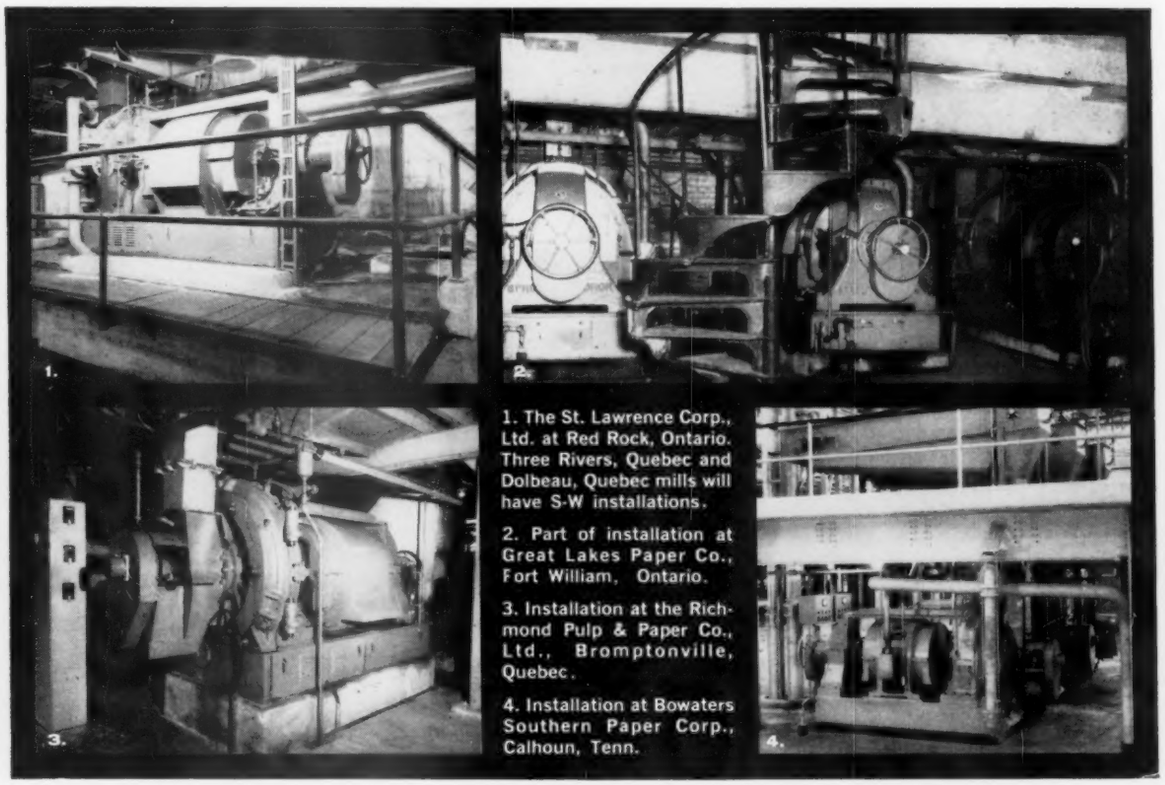
Make of Turbine	kw. (H.P.)	Year NONPAREIL Installed	Location	Gal. fill.	Neut. No. mg. KOH/g.
Westinghouse	1,500	1934	Power Plant	85	.02
Westinghouse	3,125	1936	Power Plant	275	.03
General Elec.	400	1936	Paper Mill	50	.02
Westinghouse	1,500	1941	Power Plant	250	.03
Westinghouse	5,000	1947	Power Plant	230	.03
Westinghouse	1,500	1947	Paper Mill	80	.02

Discussing lubrication. Sandy Wehking, Standard's man on the Alton Box Board account, is well qualified to do so. He's been at this work for 15 years. Sandy studied chemical engineering at Blackburn College. He has also completed the Standard Oil Sales Engineering School.

STANDARD

STANDARD OIL COMPANY
(Indiana)

for ***groundwood rejects*** *refining...*



1. The St. Lawrence Corp., Ltd. at Red Rock, Ontario. Three Rivers, Quebec and Dolbeau, Quebec mills will have S-W installations.

2. Part of installation at Great Lakes Paper Co., Fort William, Ontario.

3. Installation at the Richmond Pulp & Paper Co., Ltd., Bromptonville, Quebec.

4. Installation at Bowaters Southern Paper Corp., Calhoun, Tenn.

more and more mills are turning to

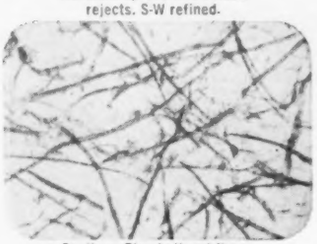
SPROUT-WALDRON 36-2 REFINERS

Such mills as the ones illustrated plus Fiberboard Products, Inc., Port Angeles, Wash., The Gould Paper Co., Lyons Falls, N.Y., and The Ontario-Minnesota Pulp & Paper Co., Ltd., Kenora, Ontario are only a **few** of the mills using Sprout-Waldron single rotating disc refiners to produce quality pulp from groundwood rejects.

THE REASONS: Strong Clean Refined Fiber . . . Economical Power Requirement . . . High Capacity . . . and Low Maintenance.

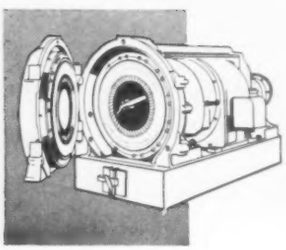
For mill reports on Sprout-Waldron groundwood rejects refining installations, ask for our file. Write to Sprout, Waldron & Co., Inc., 32 Logan St., Muncy, Pa.

Northern Spruce fine screen rejects. S-W refined.



Southern Pine bull and fine screen rejects. S-W refined.

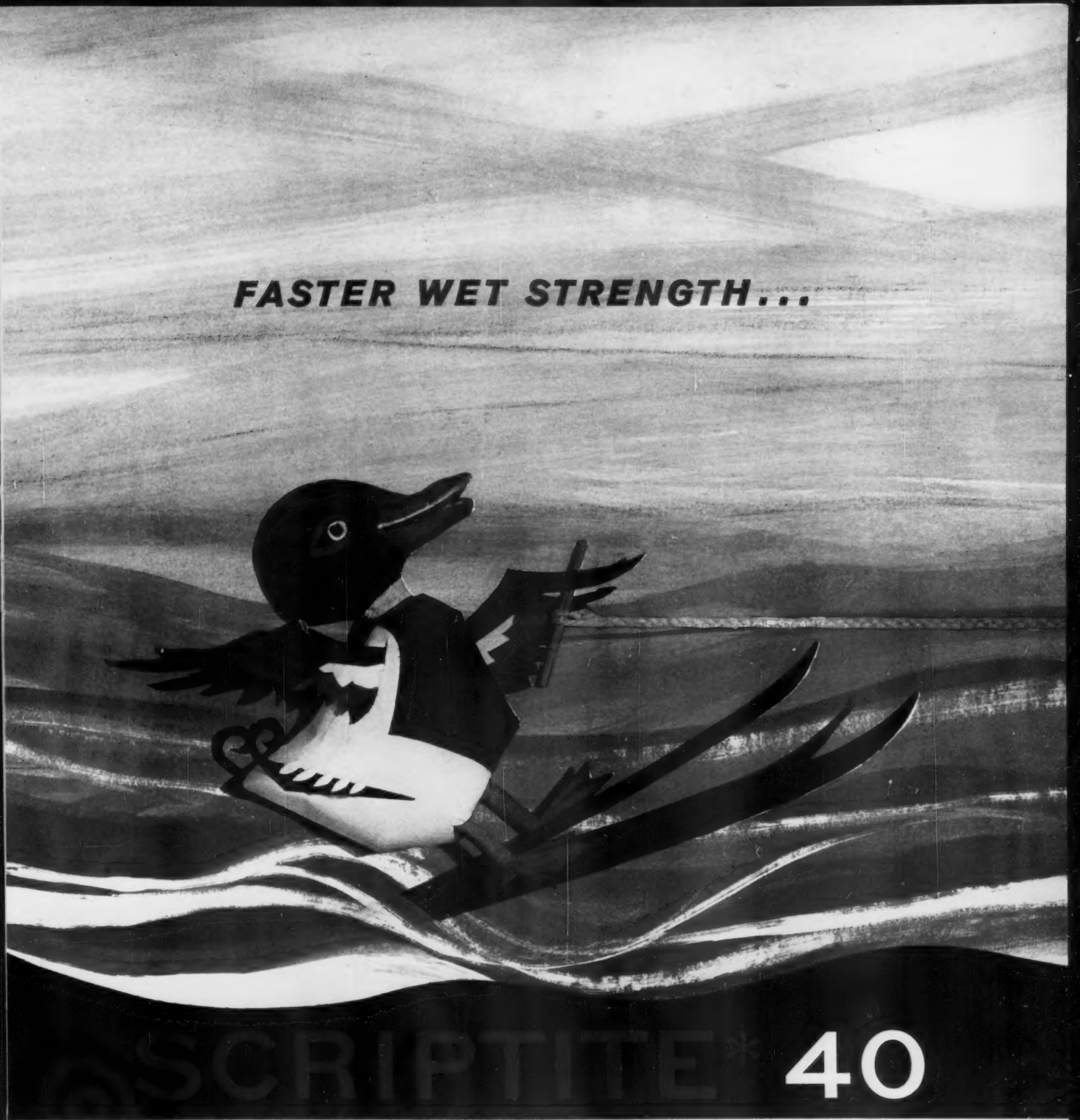
S W



SPROUT-WALDRON

PULP MILL EQUIPMENT

PP/421



a new concept in cationic urea-formaldehyde paper resins

In mill trials on unbleached and bleached kraft towelling, napkin stock and facial tissue, Scriptite 40 demonstrates a high degree of wet strength, off-the-machine and after natural aging. With minimum resin add-on high wet strength values are produced. Scriptite 40—a cationic urea-formaldehyde—also improves dry tensile, stiffness, mullen, wet rub resistance, folding endurance, internal sizing and pick resistance.

Evaluate Scriptite 40 in your operations. For samples, technical data and complete technical assistance, write to Monsanto Chemical Company, Plastics Division, Paper Resins Dept., Room 1900, Springfield 2, Mass.

MONSANTO

*SCRIPTITE REG. U. S. PAT. OFF.

The Monsanto Line of Paper Resins also includes:

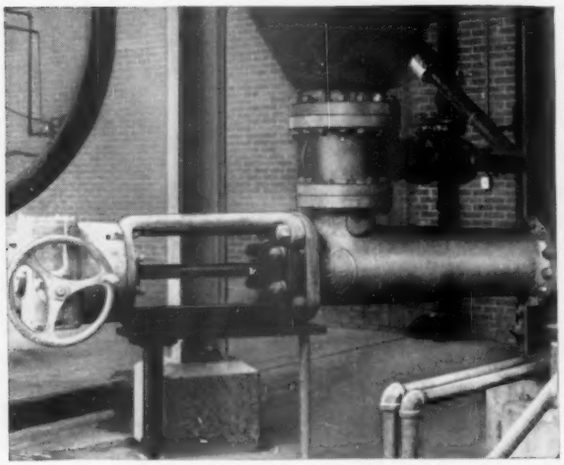
SCRIPTITE 54 ... *for outstanding water resistance and both wet and dry rub resistance.*

SCRIPTITE 52 ... *in combination with formaldehyde to give water resistance to folding boxboard and to jute liner.*

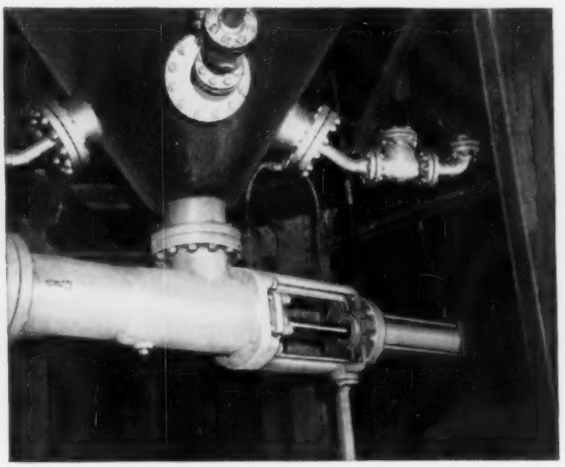
SCRIPTITE 50 ... *for unsurpassed printability and improved surface characteristics on boxboard.*

SCRIPTITE 33 ... *a melamine wet-strength resin.*

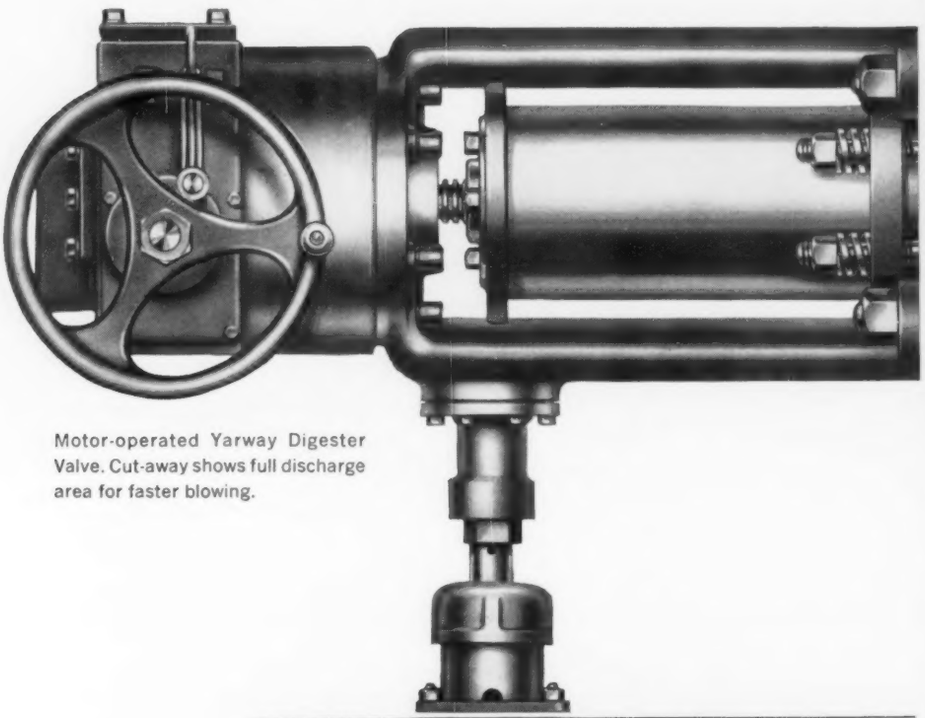
reduce costs of your product



One of five 8" motor-operated Yarway Digester Valves at large Tennessee mill.

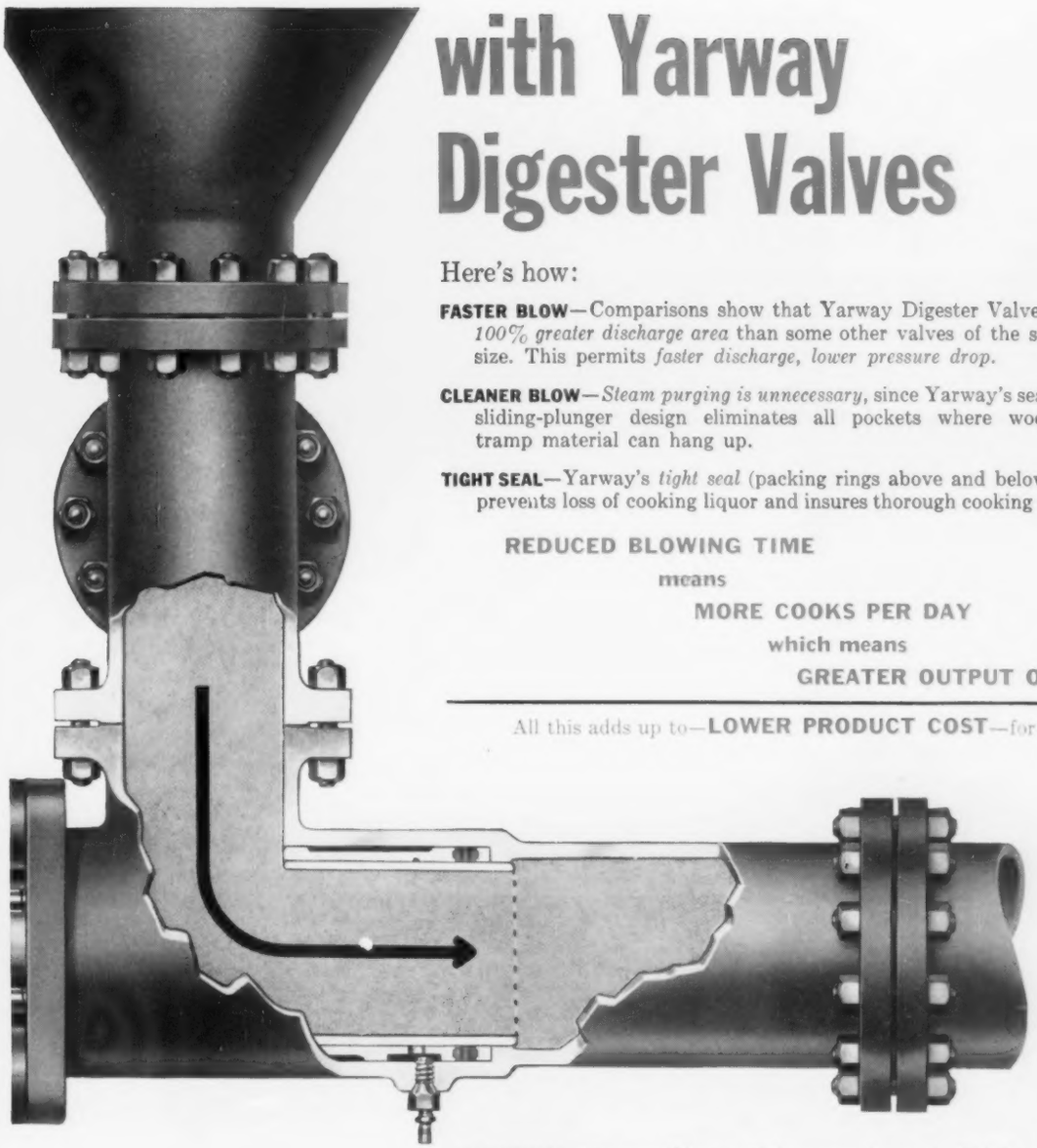


One of seven 8" hydraulic-cylinder-operated Yarway Digester Valves at large Florida mill.



Motor-operated Yarway Digester Valve. Cut-away shows full discharge area for faster blowing.

YARWAY



with Yarway Digester Valves

Here's how:

FASTER BLOW—Comparisons show that Yarway Digester Valves have *up to 100% greater discharge area* than some other valves of the same nominal size. This permits *faster discharge, lower pressure drop.*

CLEANER BLOW—*Steam purging is unnecessary,* since Yarway's seatless hollow-sliding-plunger design eliminates all pockets where wood chips or tramp material can hang up.

TIGHT SEAL—Yarway's *tight seal* (packing rings above and below inlet port), prevents loss of cooking liquor and insures thorough cooking of pulp. So—

REDUCED BLOWING TIME
means
MORE COOKS PER DAY
which means
GREATER OUTPUT OF PULP

All this adds up to—**LOWER PRODUCT COST**—for you!

PLUS ITEMS—Yarway Digester Valves may be controlled from any remote operating point. Choice of motor-unit or hydraulic-cylinder operation (see installation pictures).

Additional time and labor savings available with Yarway automatic lubrication unit.

Mills all over the world report *lower operating costs and increased production with Yarways.* Is yours one of them?

FREE BULLETINS—If you'd like full information on Yarway Digester Blow Valves and latest technical data on their selection and operation, write us today—

YARNALL-WARING COMPANY
103 Mermaid Ave., Philadelphia 18, Pa. ● BRANCH OFFICES IN PRINCIPAL CITIES

. . a good way to specify digester blow-valves

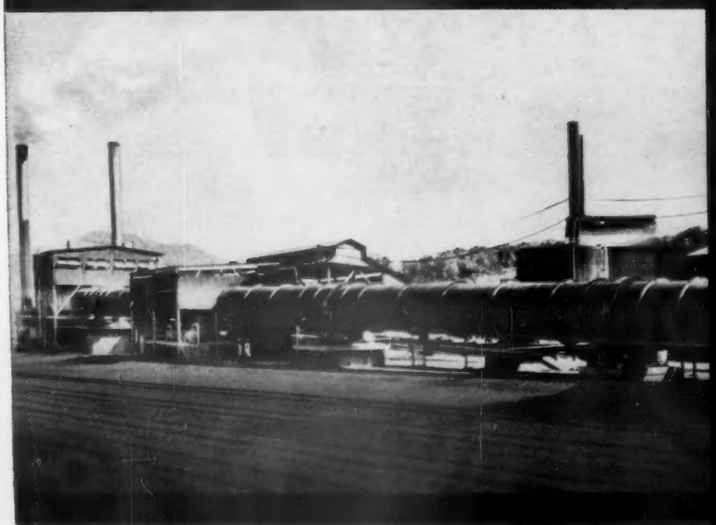
Smidth

Rotary Kilns

For Reburning Lime Sludge

We are specialists in the design and manufacture of rotary kilns, coolers and auxiliary equipment for burning lime, lime sludge and for many other purposes.

Over 1,250 Smidth rotary kilns have been furnished all over the world.



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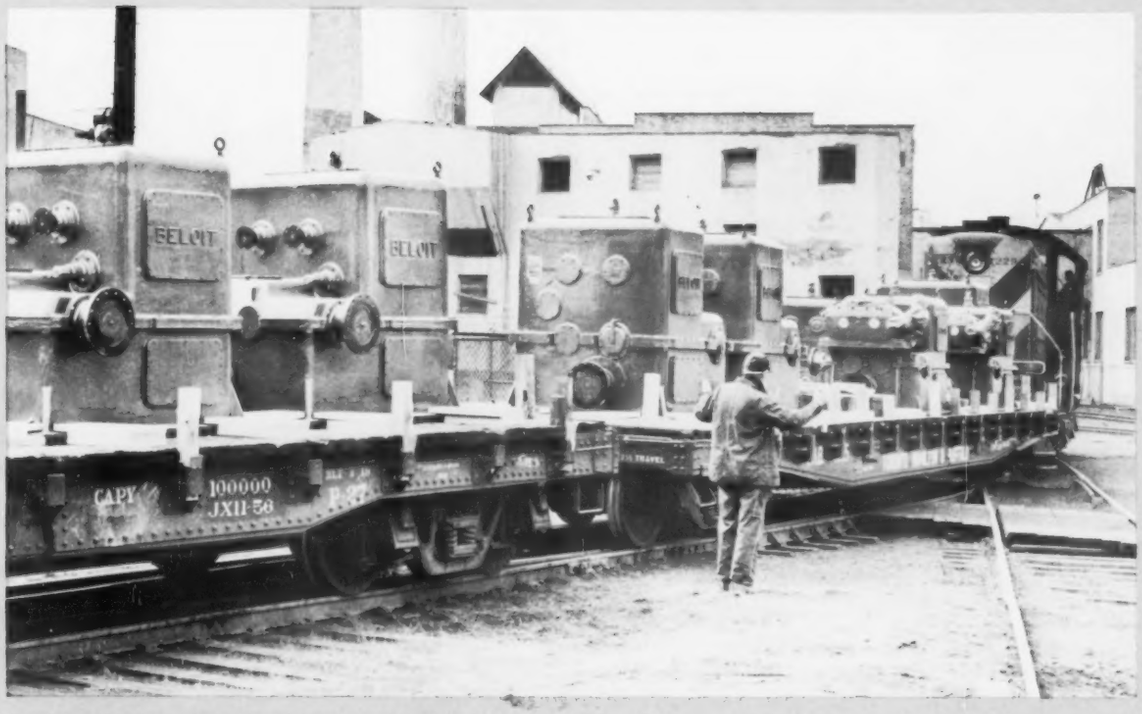
The Beloit Album



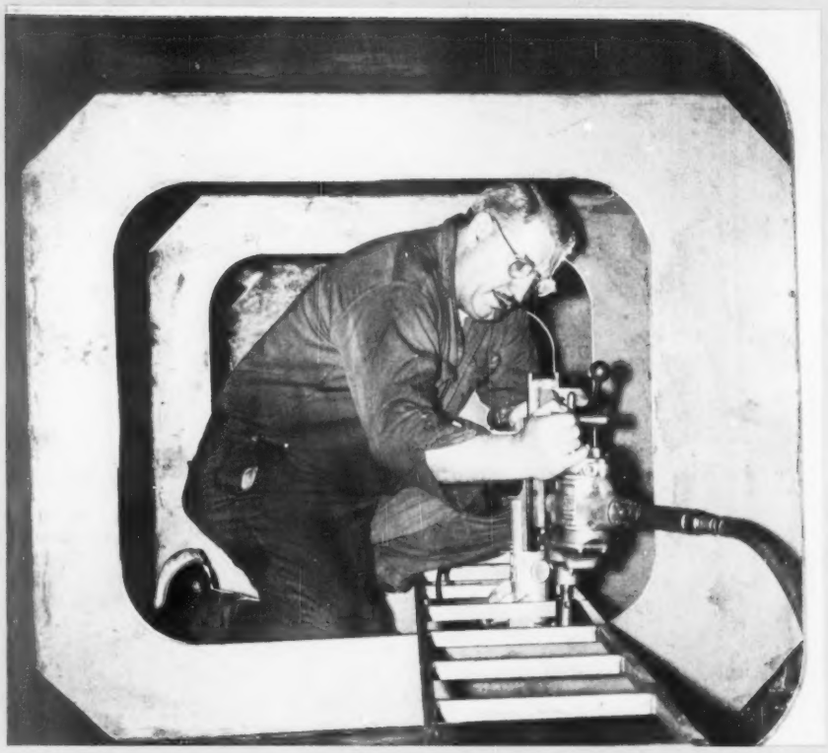
FIVES AND THREES, LOADED AND ROLLING. Cars loaded with five size and three size differential drives move out of a Beloit Iron Works siding toward the main line. Beloit developed and has been supplying these drives to mills since 1951. Mills have profitably applied the Beloit differential drive to machines making rag-content paper at several hundred feet per minute and to wide high-speed machines producing food-container board, corrugating medium, kraft grades, and newsprint.

MARATHON CORPORATION's chief engineer George Wachter *(r, c)* and production manager John Bard *(l, c)* discuss diaphragm loading on a size press with Bud Hammill *(r)* and Beloit's chief engineer, Sterling Skinner.

CARTIERE BURGO's technical director Dr. Piero Bersano *(l)* reviews current Italian papermaking problems with Harry Moore (c), Beloit president, and Gaston Bertrand, vice-president, Beloit International Corp., C.A.

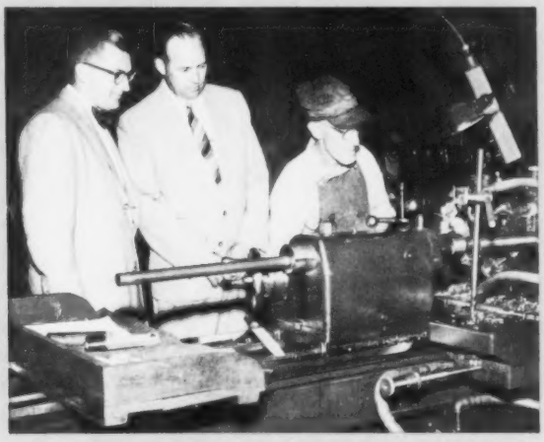
MEET YOUR ERECTOR

No. 1 of a series



HARVEY ROHR, a Beloit erector for 20 years, has played an important role in the erecting of Beloit equipment in paper mills around the world. You might see him in a tight spot such as pictured above, where a supercalender main frame ladder is getting a final fastening under Harvey's experienced eye. Beloit erectors provide a vital link with our customers. They are the men at the end of the production cycle—technicians whose responsibility it is to put Beloit machines in running order and to help get a salable sheet on the reel as quickly as possible. Beloit is justly proud of its erectors . . . truly "your partners in papermaking."

PAPETERIES DE FRANCE technical manager Michel Rouilly *(l)* is pictured with K. G. Fries, Beloit sales representative. They are discussing a 48" reel drum—which has since gone into operation on a four-roll newsprint machine.



MAC MILLAN & BLOEDEL LIMITED's Don Brewster *(c)*, assistant to the vice-president, is flanked by a Beloit father-son combination: Russ Olson *(l)*, chief of customer service, and Anton Olson, engine lathe operator.

EXPERIMENTAL setup in Beloit's research and development laboratory tests wire life with drilling patterns and suction box material. *(l to r)* John Hoover, research; Mike Cobb, staff engineer; Charles Walker, research physicist.

CROSSETT PAPER MILL's manager J. C. Hair *(l)* and Ed Beachler, vice-president, engineering, Beloit, are shown discussing Beloit equipment during an engineering conference at Beloit Iron Works.

WAUSAU PAPER MILL's design engineer Warren Johnson *(l)* and chief engineer Joe Kuhns *(l, c)* examine flexible mounting on a forming board. F. R. Erbach, sales engineer *(r)*, and D. J. Mattison, erector, explain arrangement.

MARATHON-ROTHSCHILD's mill superintendent Richard M. Elias *(r)* and A. F. Broecker, plant engineer *(c)*, pick up a fine point or two regarding the grinding of a Yankee dryer from A. E. Rounds, Beloit grinder operator.

MORRIS PAPER MILLS visitors pause in the dryer shop to watch polishing of a bearing surface. Standing *(l to r)*: George Wilford, Beloit boring mill operator; P. O. Pringle, Beloit; Tom Beckwith, Morris. Kneeling *(l to r)*: Robert Beckwith and Alvin Yonker, Morris.

your partner in papermaking

BELOIT

PAPER MACHINERY

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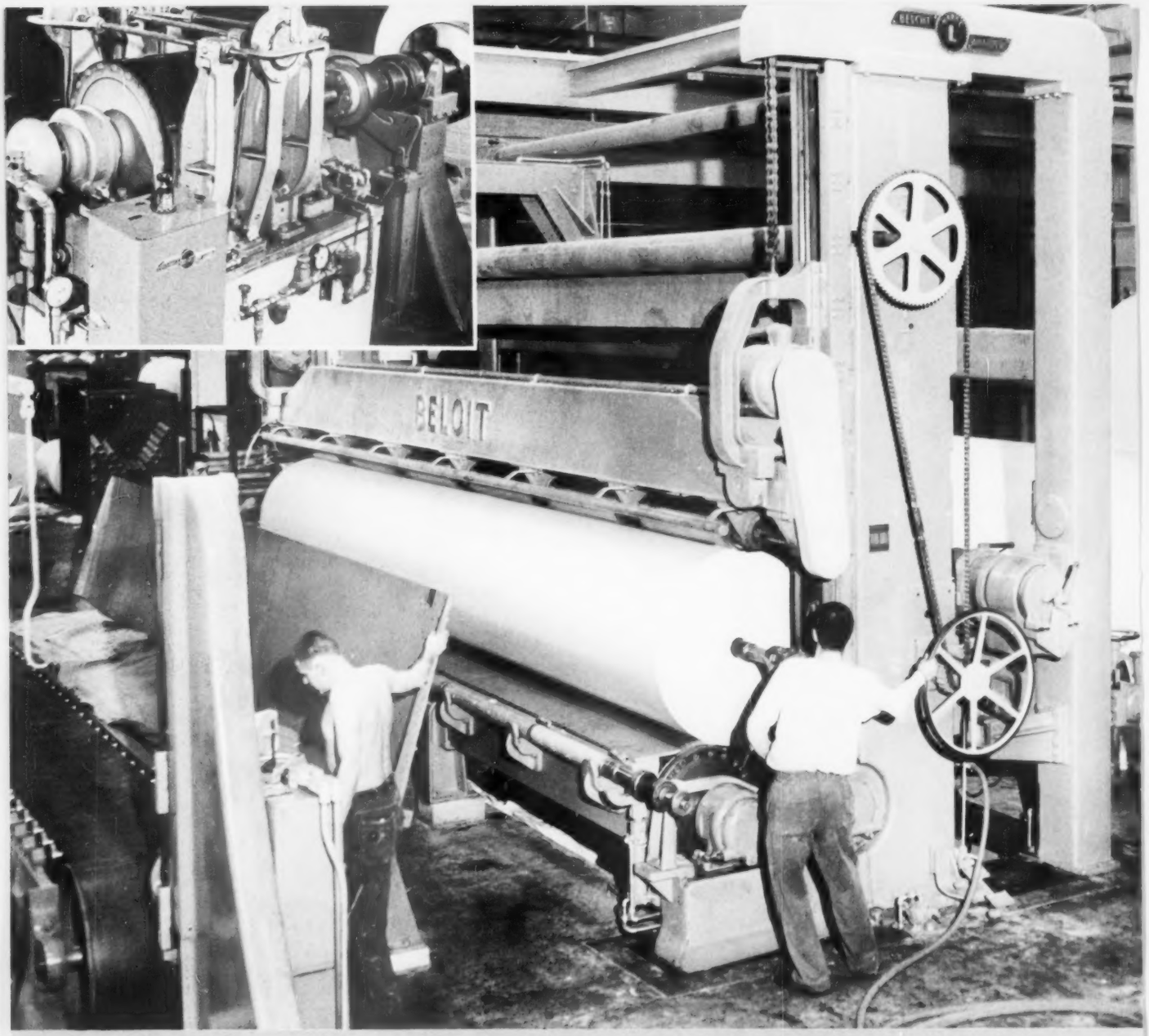
WHEN YOU BUY BELOIT...YOU BUY MORE THAN A MACHINE!



SIX THOUSAND FEET to stop in less than 40 seconds, and the newsprint sheet is still on the winder; no rethreading necessary before the next set.

The Beloit automatic tru-tension regulator *(inset)* makes such stops possible. Automatic tru-tension is one of the components of the Beloit-engineered high-speed winding system. The Beloit system permits single winders constantly to stay ahead of machines running at over 2000 fpm. Beloit automatic tru-tension regulator accurately measures tension in the sheet and adjusts the unwind stand brake, holding tension constant for winder sets of uniform hardness. Only one moving part is involved in this exclusive Beloit development. It is entirely unaffected by inertia or size of the "parent" reel, or by the rapid rate of deceleration in building a winder set. Inertia does not have to be compensated because the tension signal is derived pneumatically—directly from the sheet.

Beloit engineering integrates winder, tension control, slitting, and drive into a single system with unit responsibility.

your partner in papermaking

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For an excellent MOISTURE BARRIER coat with PETROTHENE®

POLYETHYLENE RESIN

Details on Back

Polyethylene because of its low cost, high water vapor resistance, and excellent heat sealing properties, is becoming more and more popular for moisture barrier applications. It coats practically everything used for flexible packaging of industrial or consumer items. It adheres tightly to papers, fabrics, films and foils. It adds strength, too.

Petrothene paper coating resins have these advantages over many other polyethylenes . . .

- ✓ **HIGHER PRODUCTION RATES**
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Polyethylene coatings add strength and moisture resistance in packaging

chemicals
cosmetics
drugs
foods
hardware
industrial parts
machinery
textiles
tobacco
and many others

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I would like more information on PETROTHENE Polyethylene.

My application is _____

Please ☐ send literature

☐ ask a technical representative to call.

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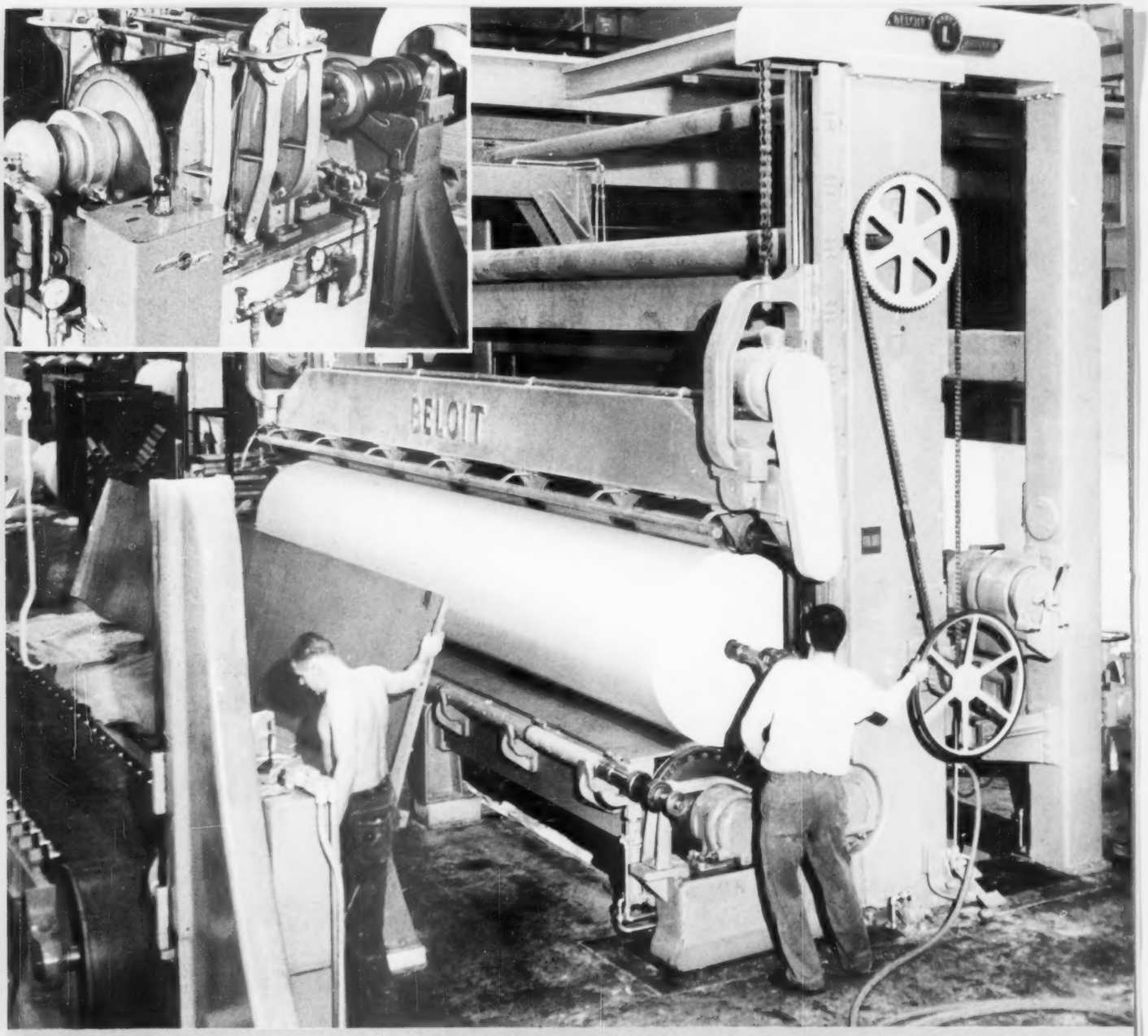

SIX THOUSAND FEET to stop in less than 40 seconds, and the newsprint sheet is still on the winder; no rethreading necessary before the next set.

The Beloit automatic tru-tension regulator *(inset)* makes such stops possible. Automatic tru-tension is one of the components of the Beloit-engineered high-speed winding system. The Beloit system permits single winders constantly to stay ahead of machines running at over 2000 fpm. Beloit automatic tru-tension regulator accurately measures tension in the sheet and adjusts the unwind stand brake, holding tension constant for winder sets of uniform hardness. Only one moving part is involved in this exclusive Beloit development. It is entirely unaffected by inertia or size of the "parent" reel, or by the rapid rate of deceleration in building a winder set. Inertia does not have to be compensated because the tension signal is derived pneumatically—directly from the sheet.

Beloit engineering integrates winder, tension control, slitting, and drive into a single system with unit responsibility.

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coat with

PETROTHENE®

POLYETHYLENE RESIN

Polyethylene coating finish may be dull or have a high gloss, whichever is preferred.

Vapor barrier characteristics are the same with either finish.

Details on Back

42 LB. UNBLEACHED LINER BOARD with a 14.4 lb. (1 mil) coating of PETROTHENE® 203 polyethylene resin.

PETROTHENE® 203, with a melt index of 8.0, is especially popular for paper coating because it permits production rates 20-30 percent higher than many other resins.

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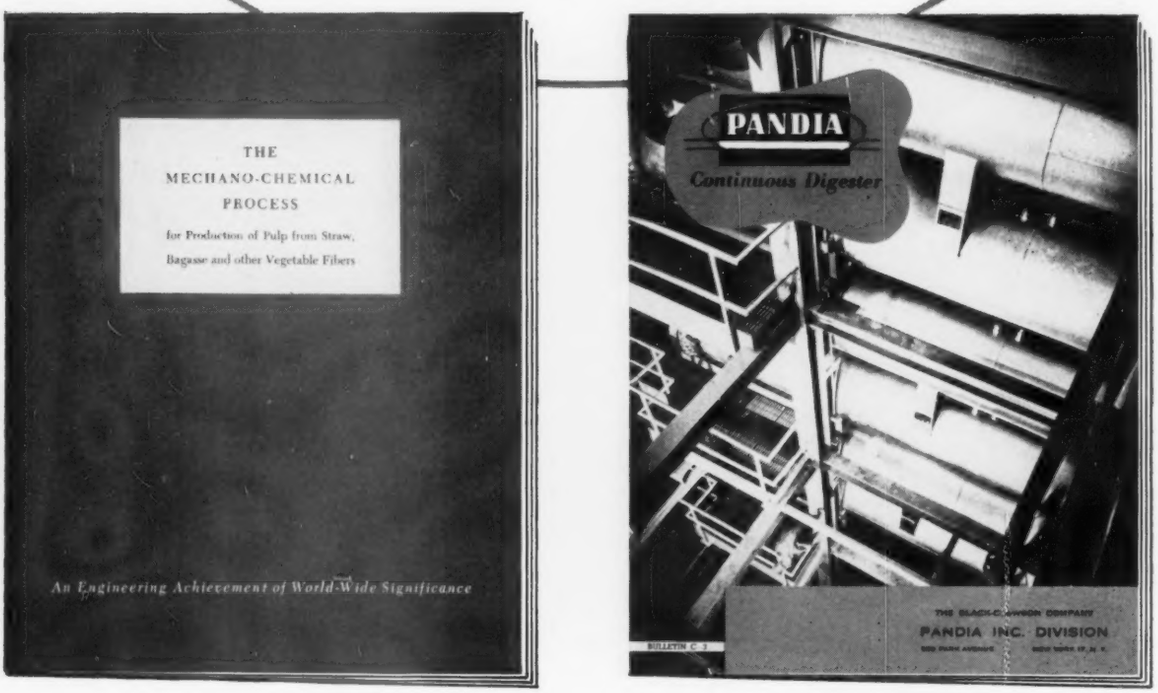
Which pulping process best fits your needs?



The answer hinges on the raw material to be pulped, the type and quantity of the finished product you intend to manufacture, and many other complex factors.

These two booklets explore the respective merits of two new processes: *The Mechano-Chemical Process for Production of Pulp from Straw, Bagasse and Other Vegetable Fibers,* describes the Hydrapulper Digestion Method and contains 7 samples of papers made by this process. *The Pandia Continuous Digester* explains the new technique of continuous cooking.

We furnish equipment for these two excellent pulping methods—*or for any other process which meets your requirements.*

In these helpful booklets you will find clear-cut facts on which to base your choice of pulping methods. Send for your free copies today.

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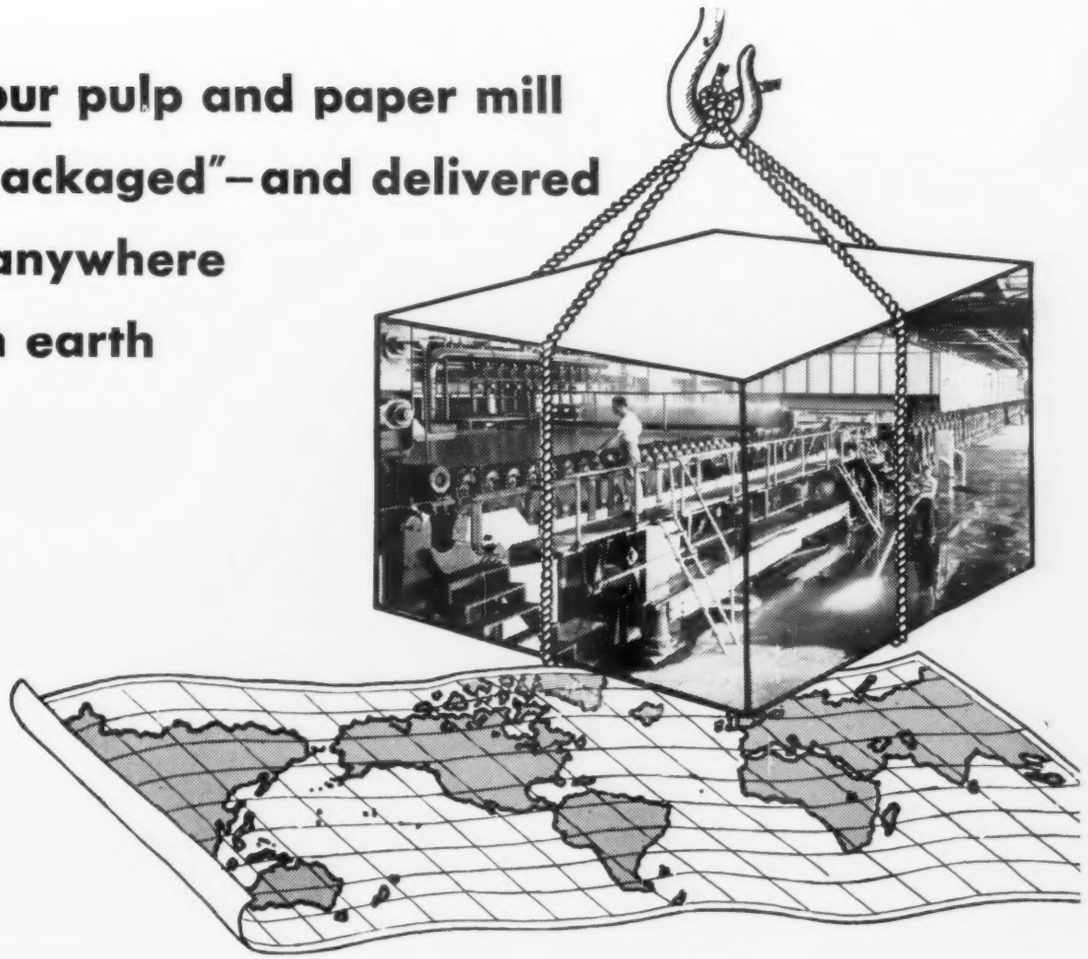
World Leaders in the Development of Pulp Mills for the Use of Local Fibers

250 Park Ave., New York 17, N. Y. **18/19 Savile Row, London W. 1., England**

Your pulp and paper mill "packaged"–and delivered –anywhere on earth



We are now building the first newsprint mill in Mexico (100 metric ton daily capacity); the first newsprint mill in Colombia (100 metric ton daily capacity); the first pre-hydrolysis kraft pulp mill in France (100 metric ton daily capacity); a straw pulp mill in Mexico (100 metric ton daily capacity); and a bagasse pulp and paper mill in Colombia (80 metric ton daily capacity). We are also supplying equipment for the first bleached bagasse pulp and paper mill in Cuba (100 metric ton daily capacity). Several other mills are in the project stage but building has not yet commenced.

Behind this concept of "packaged" paper mills stands our world-wide organization with over 100 years of experience in pulp, paper and machinery. We are equipped to render you *any* or *all* of the following services:

1. Conduct a technical and economic survey and prepare an appraisal report.
2. Engineer the complete project in cooperation with the world's leading consulting engineers.
3. Produce and deliver all the pulp and paper machinery and other necessary equipment that cannot be produced in the country where the mill is to be built.
4. Supply the necessary trained personnel to assure proper operation of the project until local workers can take over.
5. Assist the local group to obtain financing within the currencies available in the particular country, such as dollars, sterling, francs, D-Marks, Finn-Marks, etc.
6. Assist the local group to obtain the necessary raw materials and chemicals to operate the mill after it is built, as well as sell the output through Parsons & Whittemore's own offices.

Our book—"Growing with the Paper Industry Since 1853"—will give you more information on our ability to handle any pulp and paper mill project through all of the necessary steps from inception to completion or any combination of responsibilities that best suits your interests. Write for it without obligation.

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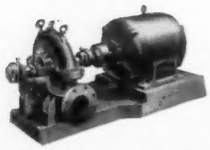
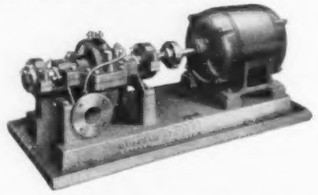
"BUFFALO" BUILDS A "CUSTOM" PUMP FOR EVERY JOB IN YOUR PLANT

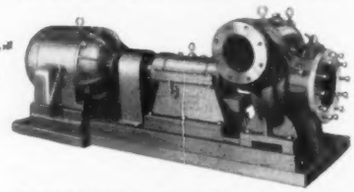
(at REGULAR pump prices!)



CLEAR WATER—For clear water service there is no more efficient pump than the double-suction "Buffalo" Type "SL". Its hydraulic balance, its free-flow water passages and husky construction mean economical service over many years. Capacities from 10 to 14,000 gpm. Write for Bulletin 955.

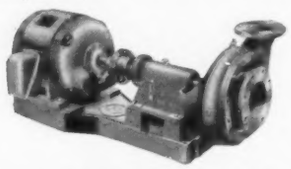


HIGH PRESSURE – "Buffalo" Type "RR" Multi-stage Pumps combine rugged strength and efficiency on boiler feed and other clear water service, against heads as high as 1500 feet, in capacities up to 900 gpm. Shafts are extra-heavy with ball bearing support on both ends — stuffing boxes are deep. Write for Bulletin 980 for all engineering details.

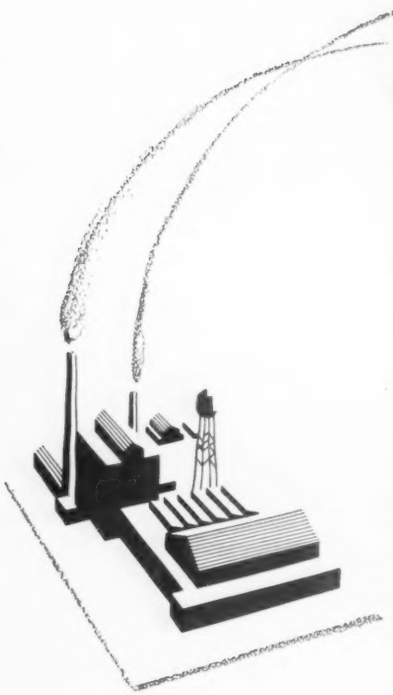


NON-CLOGGING – For moving high-consistency liquids, "Buffalo" Diagonally Split-Shell Pumps offer freedom from expensive shutdowns. And since efficiency does not depend on close impeller clearances, there is no problem of "wedging" and wear. Available rubber-lined for corrosive or abrasive liquids. Write for Bulletin 953.

HEAT TRANSFER – "Buffalo" Heat Transfer Pumps are specifically designed for high-temperature liquids. Successfully used in large installations, they employ special water-cooled bearings and packing, plus suitable alloys — built into our basic, efficient single-suction, solid shell design. Write for engineering details.



CHEMICAL LIQUIDS – "Buffalo" builds 10 special types of chemical pumps in a wide choice of trim for almost any corrosive, abrasive or high-consistency liquid. Above is a single-suction, full ball bearing model. Write for Bulletin 982 and check this wide selection.



Because "Buffalo" builds a *complete* line of pumps tailored to the liquid-moving applications of every industry, you get all the benefits of a custom-designed pump — without paying a "custom" price. You can match a "Buffalo" Pump to your exact conditions — and enjoy the high efficiency, easy maintenance and long life that only such a pump can deliver. Shown here are some of the types — simply write us about your problem, and we'll recommend the *right* pump!

ALSO . . . *"Buffalo" Close-Coupled Pumps, Sump Pumps, and Raw Sewage Pumps — all with the "Q" Factor, or built-in Quality which provides trouble-free satisfaction and long life in every "Buffalo" product.*

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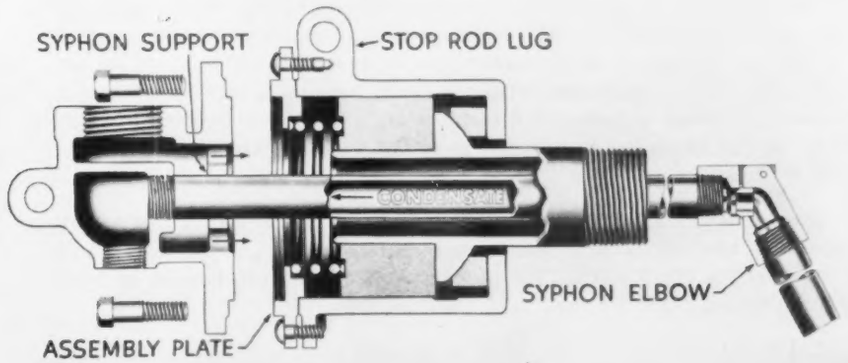
Everything the name implies –

...thanks to "Green Streak" Seal Rings and Ni-Chrome Plating

The new SUPER Type SBP Johnson Joint

The "Green Streak" seal rings are of a greatly improved structure—extremely hard and virtually non-porous. The Ni-Chrome plating—chromium on top of nickel—is done by a special process. Together, this combination makes possible a joint of unusually low friction characteristics and long life.

Test installations have already shown that this SUPER construction will out-perform and out-last anything of its kind. It is today's best answer for paper machines, calenders and corrugators where shut-downs are costly and operating pressures are on the rise.

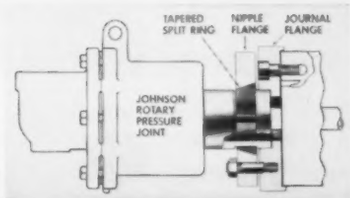


Type SBP SUPER Johnson Joint, which combines "Green Streak" rings and Ni-Chrome plated wearing surfaces for unusually long wearing, low friction characteristics. The Johnson Syphon Elbow, shown at right in picture, permits replacing unwieldy curved syphon pipes with two straight pipes; it hinges to pass right through joint, seats of its own weight when in position. Special assembly plate is provided to hold internal parts of joint in position when head is removed to get at syphon pipe.

Another Johnson Development . . .

THE QUICK-RELEASE NIPPLE

Eliminates a threaded nipple; utilizes powerful wedging action between nipple flange and tapered split ring to lock nipple securely in position. Greatly simplifies installation and removal — ends danger of damaging nipple with heavy wrenches. Available for all Johnson Joints.



Write for Bulletin S-3001 ... for full engineering data on the new SUPER S Johnson Joints

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Rotary Pressure Joints • Direct Operated Solenoid Valves

when you're handling CHIPS...

SPECIFICALLY ... NOTHING BEATS *CONVEYAIR* FOR MOVING CHIPS *ANY DISTANCE – ANYWHERE – AT LESS COST!*

Conveyair's "Chipveyor" will reduce your chip-handling costs right down the line . . . it costs less to install, less to operate, less to maintain . . . but that's only half the Conveyair story; the real merit of this pneumatic conveying system lies in its *flexibility*, and its excellent performance over both short and long distances.

Conveyair's flexibility starts on the drawing board, where every Chipveyor is designed to do a specific handling job . . . it may be required to move chips, hog fuel, planer shavings, sawdust or other granular materials a few hundred feet, or well over a mile . . . to go under, over, or around obstacles . . . to deliver the material under pressure or incorporate a cyclone to simulate gravity discharge. With this flexibility in design and installation, a Chipveyor is often the *only* conveying system which can be adapted to a mill without extensive and costly alterations to layout.

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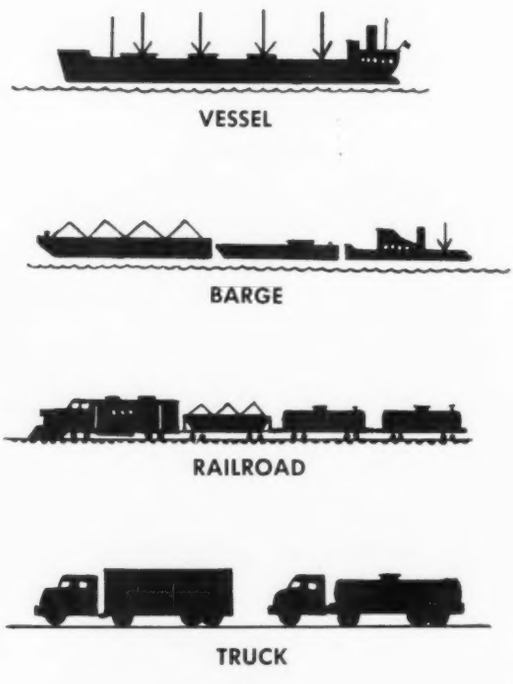

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. . . and remember — *technical service in connection with your specific problems is available without obligation*

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Nopco Technical Service Representatives are trained to tackle—and solve just about any conceivable production problem which can confront a mill. Their combined wealth of information and new ideas on paper processing are yours free for the asking.

This is all part of the proven paper service you get from your Nopco man—a trained paper mill trouble shooter—serving you with a complete line of chemicals. He's eager to help you make better paper—at less cost. Try him out without obligation.
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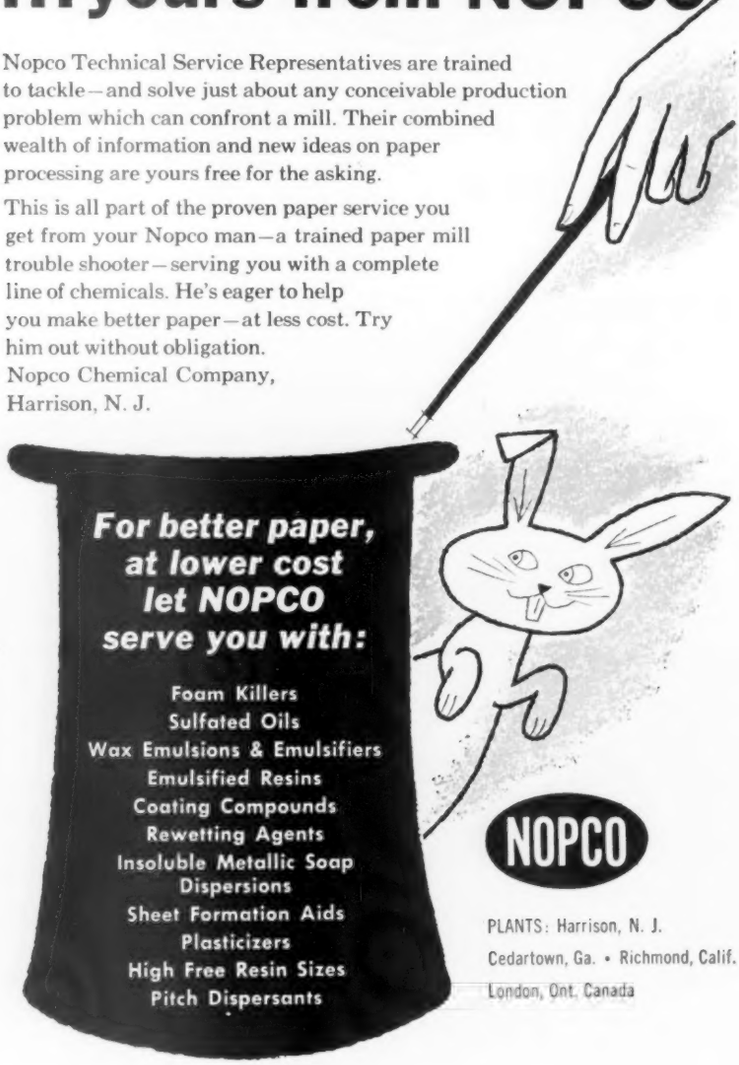

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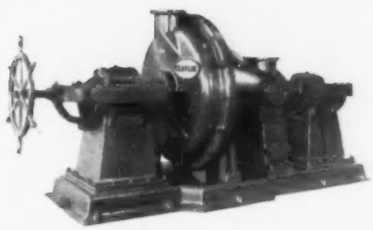
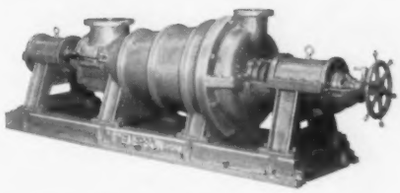


EMERSON CLAFLINS — continuous beaters and refiners — 4 models with up to 300 ton capacity.



EMERSON JORDANS — 9 models with up to 120 ton capacity — split head design for plug removal without removing bearings from the shaft.

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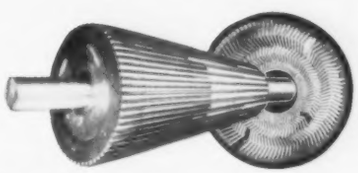

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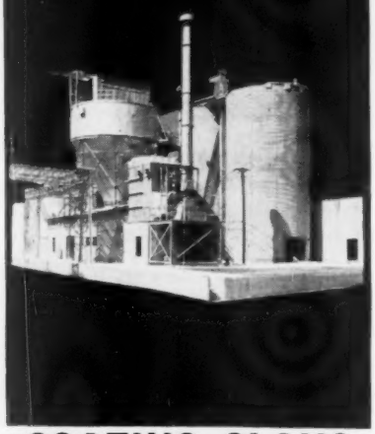

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CONVERTING PLANT
SALES REPRESENTATIVE
KVP
THE KVP COMPANY, Kalamazoo, Michigan

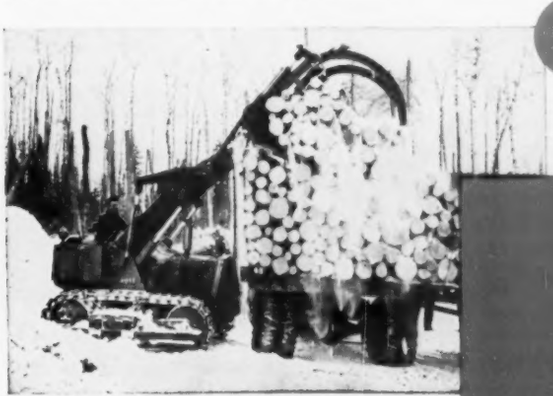
4 ways International® Drott® Skid-Grapples

speed pulpwood production in the woods . . . at the mill!

1 **LIKE HUMAN ARMS** carrying firewood, International Drott Skid-Grapple lower prongs slide under the pile, as the hydraulically controlled top grab-arm hugs the big load securely. Pry-over-shoe break-out action and ground level bucket rollback "break" logs loose from frozen piles, give you fast, positive load control.

2 **SEMI-SKID TRANSPORT** on big rugged Drott skid-shoes permits operating at time-gaining speed, adds stability, provides clear-view visibility. You get top production every working hour. All-weather, all-condition crawler traction helps you beat adverse conditions and keep producing.

3 **YOU PILE HIGH** into trucks or onto piles . . . quickly, easily and with complete control because of Drott grab-arm "hug-action". Piling, skidding and loading operations are done with almost no "bull-work". Skid-grapple savings of $1.00 per cord are ordinary!

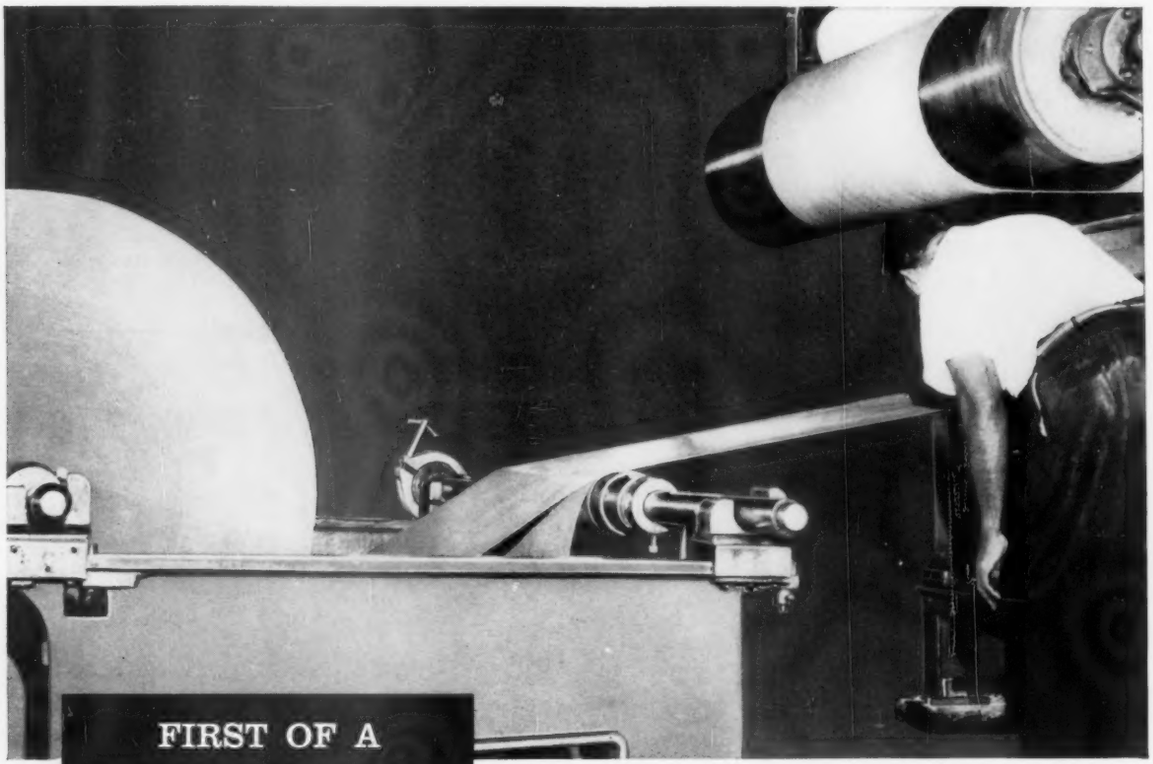


4 **SELECTIVE DUMPING CONTROL** permits releasing logs one by one, or all at once. Top grab-arm is controlled by third valve of hydraulic system, which can also be used to operate rear-mounted road-working equipment. Ask your International Drott distributor about Drott Skid-Grapple advantages in your pulpwood production. Call him today.

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 8, Wisconsin

INTERNATIONAL®
DROTT®

C.P. Starches...Try 'em for Size



FIRST OF A FAMOUS LINE FOR **Corrugating** AND **Laminating**

Globe®
STARCHES and DEXTRINES

Need a heavy paste of maximum adhesiveness for porous boards? Or a starch that will prevent uneven drying and curling of boards of different absorptiveness? Whether you need a starch for a highly critical operation or for general use at minimum cost, you'll more than likely find it among the Globe Starches and Dextrines—most widely used line of adhesives for corrugating and laminating.

Corn Products makes no fewer than six lines of starches and several dextrine products for these important converting operations. So no matter how tough your problem, how exacting your requirements, you'll find a Corn Products starch that's ideal for the job. Technical assistance in selecting the right one is available without charge or obligation.

EAGLE®
•
FOXHEAD®
•
LAM-O-DEX®
•
AMIDEX®
•
CORAGUM®

CORN PRODUCTS SALES COMPANY, 17 Battery Place, New York 4, N. Y.
Makers also of AMIJEL,® HERCULES and TEN-O-FILM® starches for the paper industry

How Crane valves cut costs at Long-Bell

Four times longer valve life in corrosive creosote service

The scene is in the treating plant of the Long-Bell Division of the International Paper Company, at Longview, Washington. The valve in the line from hot well to creosoting retorts is a Crane Ni-Resist gate, installed in 1949.

However, back in 1947, another make valve of the same type was used here. But it was an early victim of corrosion from the creosote and light oil vapors present. It began to leak in less than a year, and had to be replaced with this Crane valve after 18 months.

In contrast, the Crane Ni-Resist valve resisted leakage for 6 years, until its disc was corroded in 1955. Even then, only the disc was replaced, and the original valve is still in service.

Combined with Crane design and workmanship, Ni-Resist alloy cast iron with 18-8 S Mo trim provides the most economical valves for many process industries. They have substantially greater resistance to corrosion, erosion and wear than ordinary cast iron valves, yet cost very little more.

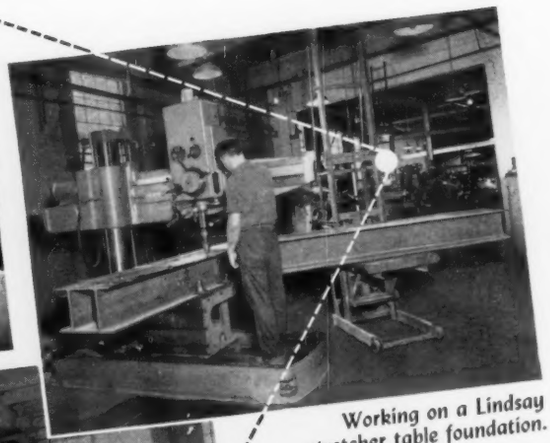
Look into these valves with your Crane Representative, or write to Crane Co. for Circular AD-2047.

CRANE VALVES & FITTINGS

PIPE • PLUMBING • KITCHENS • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers Serving All Areas

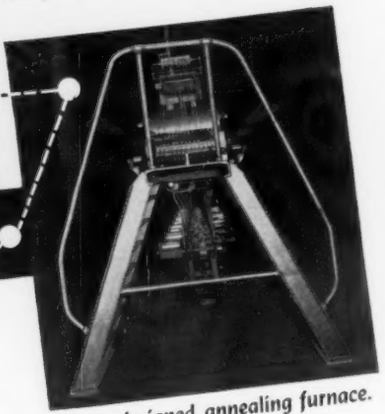
It all starts here . . .



Working on a Lindsay stretcher table foundation.

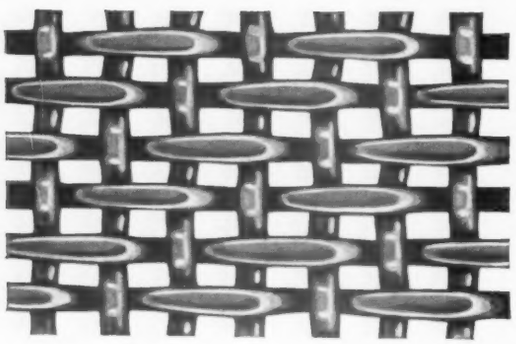
Completing a Lindsay loom.

SPECIALIZATION



A Lindsay designed annealing furnace.

—it always means the best!



Since 1903, Lindsay has specialized in one field—the weaving of Fourdriner wires to make possible better paper and paper products. To that end, we design, engineer and build much of our own equipment, especially our looms. Result—a closer, surer control over the quality of Fourdriner wire cloth.

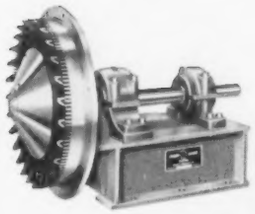
THE LINDSAY WIRE WEAVING COMPANY

CLEVELAND 10, OHIO

LINDSAY WIRES

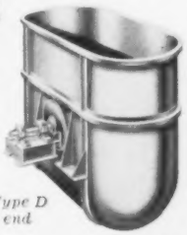
FOR PAPER MANUFACTURING

MORDEN



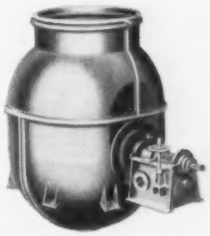
Model C "Slush-Maker" pulping unit

Around the world, the



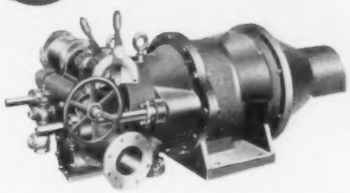
"Slush-Maker" Type D continuous dry end

name "Morden"



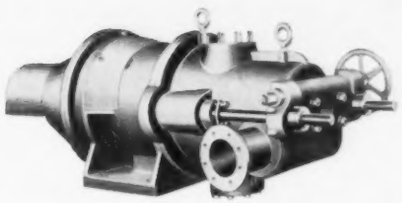
"Slush-Maker" Type A batch or continuous

stands for



No. 6 "Stock-Maker" for beating

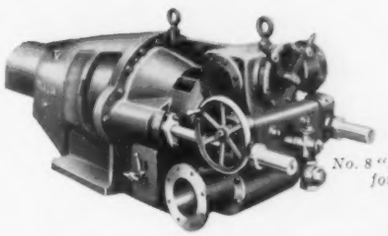
specialists



"Stuff-Maker" for jordaning

in quality and

in service.



No. 8 "Stock-Maker" for beating

Send for your copy of the Morden Catalog, and ask for an in-the-mill discussion of your stock preparation requirements.

MORDEN MACHINES COMPANY

3420 S. W. MACADAM AVENUE, PORTLAND, OREGON

UNITED STATES REPRESENTATIVES — Midwest: Dan B. Chapman, Appleton, Wis.; Northeast: Orton Corporation, Fitchburg, Mass.; South: Brandon Sales, Greenville, S. C.

Two Disc American® Saveall

Unusual Size Unit Handles 650 GPM with Excellent Clarity Results...

Probably the most unusual Saveall in the paper industry today is the 7′ dia. by 2 disc American Saveall at Hudson Pulp & Paper Company's Augusta, Maine mill. Unusual because it is the first known Saveall of this unique size; and because it was a unit designed for the mill's requirements — not vice versa.

This 2 disc Saveall is currently closing a machine which makes colored tissue from straight unrefined sulphate. Designed to handle 500 gpm and produce a clarity of 0.18 lbs./1000 gal., this small unit has handled up to 900 gpm with excellent clarity results.

American (Disc-Type) Savealls are available in two diameters — 7 and 9 feet. From 2 to 8 discs are available in the 7′ dia. units and from 4 to 12 discs in the 9′ dia. units.

One of the outstanding advantages found in American Savealls is the large filtering area and high capacity with floor space saving. The 7′ dia. by 8 disc Saveall has 560 sq. ft. of filtering area and occupies only 8½′ by 15½′ of floor space. The 9′ dia. by 12 disc unit with a filtering area of 1,350 sq. ft. requires an area of only 23′ x 12′.

For more information on the American Disc-Type Saveall write for Bulletin No. 701-R, Dorr-Oliver Incorporated, Stamford, Connecticut.

American Trademark Reg. U. S. Pat. Off.

DORR-OLIVER
INCORPORATED
WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT
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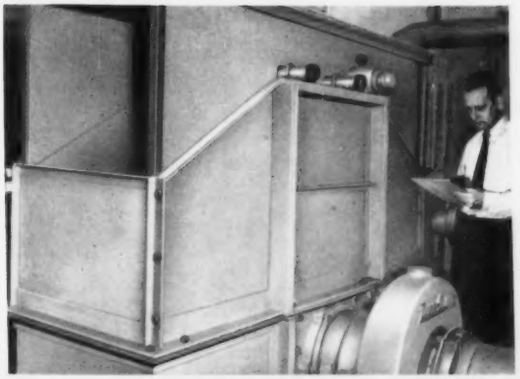
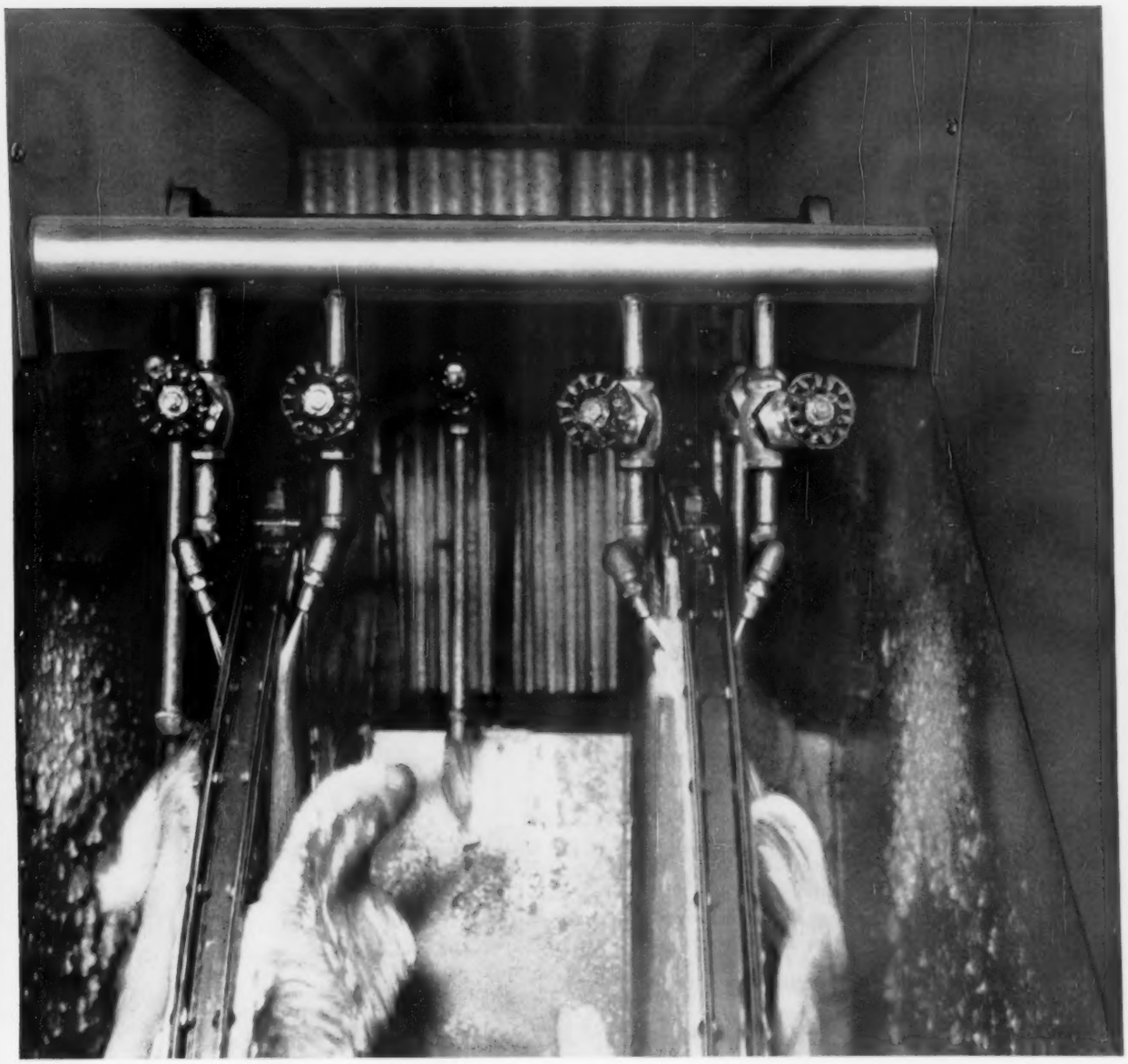
Sluicing jets cut under the sheets and peel them off. The recovered white water fines and valuable fibres are then returned to the stock chest with the sheet, and the clarified white water is available for reuse.



at HUDSON
Pulp & Paper
Co.



Considerable mill data on the effectiveness of Separan 2610 is now available. Results overwhelmingly agree that this high-speed flocculant promises money savings and improved sheet properties in numerous operations of pulp and paper manufacture. Read for yourself the findings, as . . .

MILLS REPORT

on Separan 2610, the new flocculating agent

FILLER RETENTION—By adding 0.3 pound of Separan 2610® per ton of finished paper *(45-pound envelope stock)*, one mill reduced clay content from 550 pounds to 350 pounds. Ash increased 6.5%. Opacity went up 3 points to 90. Net savings: about $3.20 per ton of finished paper. In addition, sheet properties were improved. *On 50-pound offset*, another mill reduced clay content in the furnish by 25% and cut titanium dioxide requirements as much as 35% with a 0.25-pound addition of Separan 2610 per ton. Ash remained constant at 12%; opacity rose from 90 to 91. *On 31.5-pound hi-grade offset*, 0.5 pound of Separan 2610 per ton of paper raised ash to 9.3%, a 2.2% gain. From 92, opacity went to 95. *White patent coated news*—Report shows 0.5 pound per ton of board on a cylinder machine cuts fiber and filler in white water by 25% to 40%.

SAVE-ALLS — On flotation type, 1 ppm Separan 2610 saved $45 a day on flocculant cost for white water from publication-paper machine. Decreased sensitivity to pH changes was also indicated. In white water from an uncoated printing-paper machine, another mill overcame excessive solids content in the effluent: Separan 2610 at 3 ppm brought a 3-fold reduction, plus improved recovery and operation. *In a drum type vacuum save-all*, Separan 2610 treatment improved operation and increased capacity at 1 ppm.

PROCESS MILL WATER—Mill reports increased capacity of 50% with 0.15 ppm Separan 2610. Flocculant costs reduced 30%.

CLARIFICATION OF WHITE LIQUOR—Great improvements reported here, too, with only 0.02 pound to 0.03 pound of Separan 2610 per ton of lime. On a laboratory scale, this remarkable new flocculant also shows promise in white-water and de-inking waste clarification at 0.05 to 5.0 ppm loadings; in lime mud filtration at 1.0 to 10.0 ppm loadings; and in retaining fines as a wet-end additive at 0.1 to 0.5 pound per ton of paper.

ELIMINATES MANY OLD PROBLEMS—A synthetic flocculant of constant uniformity, Separan 2610 is effective over a wide pH and temperature range, is noncorrosive and presents no hazard in normal use. It also requires no preservative . . . and is especially easy to prepare and apply. A new disperser enables you to dissolve large amounts without a mechanical mixer!

A COMPLETE REPORT has been prepared, titled "Separan 2610 in the Pulp and Paper Industry". For your copy and/or a test sample of this new flocculating agent, write THE DOW CHEMICAL COMPANY, TECHNICAL SERVICE AND DEVELOPMENT, Dept. SE937G-1, Midland, Michigan.

New booklet reports more facts and figures on mill results. *Write for your free copy today!*

you can depend on DOW CHEMICALS

DOW

ESCO

LIGHT-WEIGHT LAP JOINT STUB ENDS

Now you can eliminate time consuming and expensive, hand-cut, lightweight stub ends that make welding inspection difficult.

ESCO Lightweight Stub Ends are designed to keep operational unit stresses low throughout the stub end, particularly at the critical area where the pipe joins the stub.

Made for use with 10-14 gauge fabricated pipe, these lightweight stub ends make inspection easy because the flange does not hide the weld.

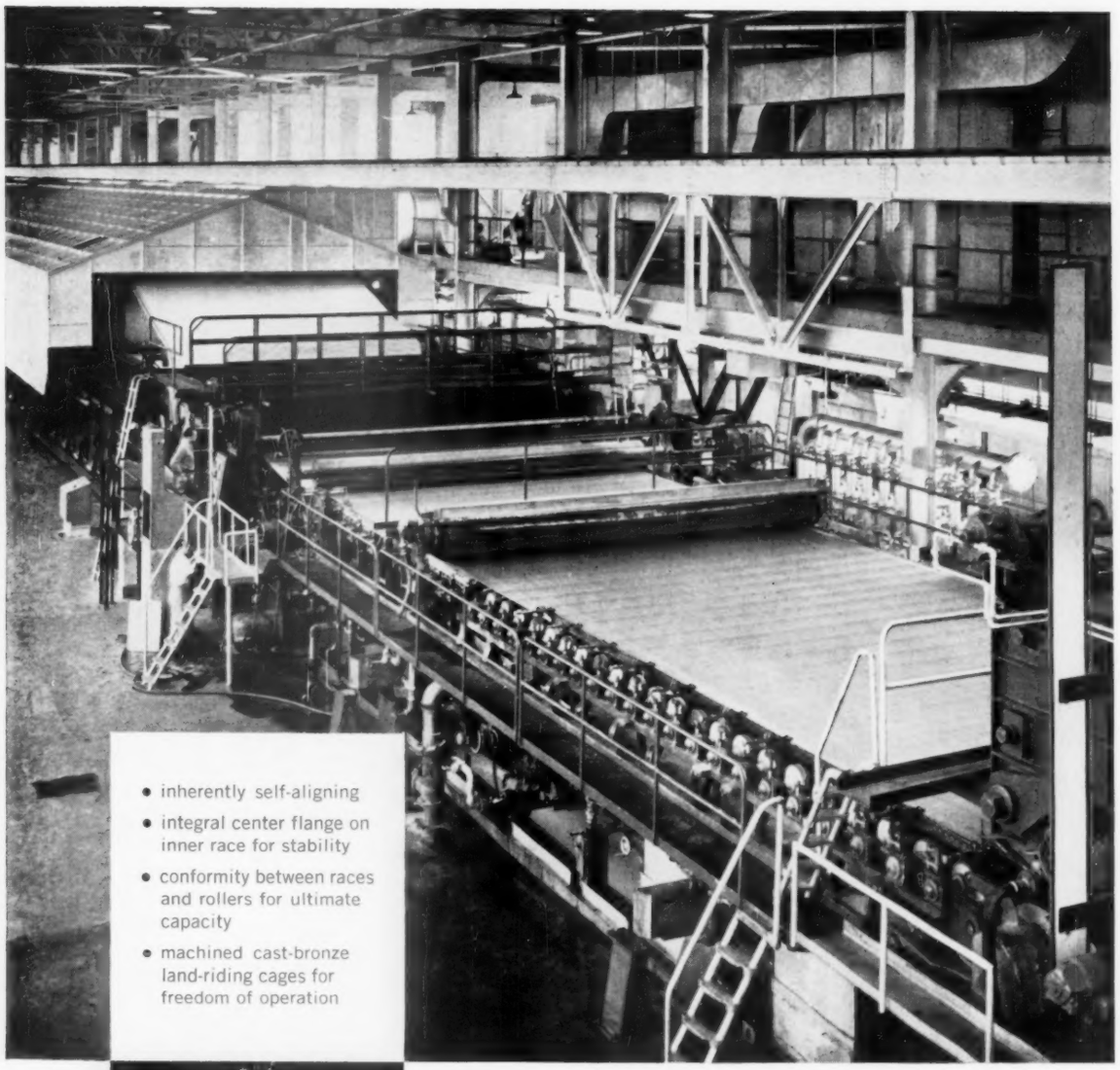
Cast in nominal tubing sizes from 2″ through 20″ and IPS sizes 2″ through 24″ in *ESCO* Alloy 45S (Type 316), these lightweight stub ends are conveniently warehoused in sufficient quantities for immediate delivery.

See your ESCO dealer. Ask for ESCO Catalog No. 156 containing dimensional data.

ESCO®

ELECTRIC STEEL FOUNDRY COMPANY

2167 N. W. 25TH AVE. • PORTLAND 10, OREGON
MFG. PLANTS AT PORTLAND, ORE. AND DANVILLE, ILL.
Offices in Most Principal Cities
ESCO INTERNATIONAL, NEW YORK, N. Y.
IN CANADA ESCO LIMITED



- inherently self-aligning
- integral center flange on inner race for stability
- conformity between races and rollers for ultimate capacity
- machined cast-bronze land-riding cages for freedom of operation

A New World's Record!

World's record on 50# Kraft bag paper—2,200 fpm—is held by this 232-inch paper machine built by Beloit Iron Works for St. Regis Paper Company at Jacksonville, Florida.

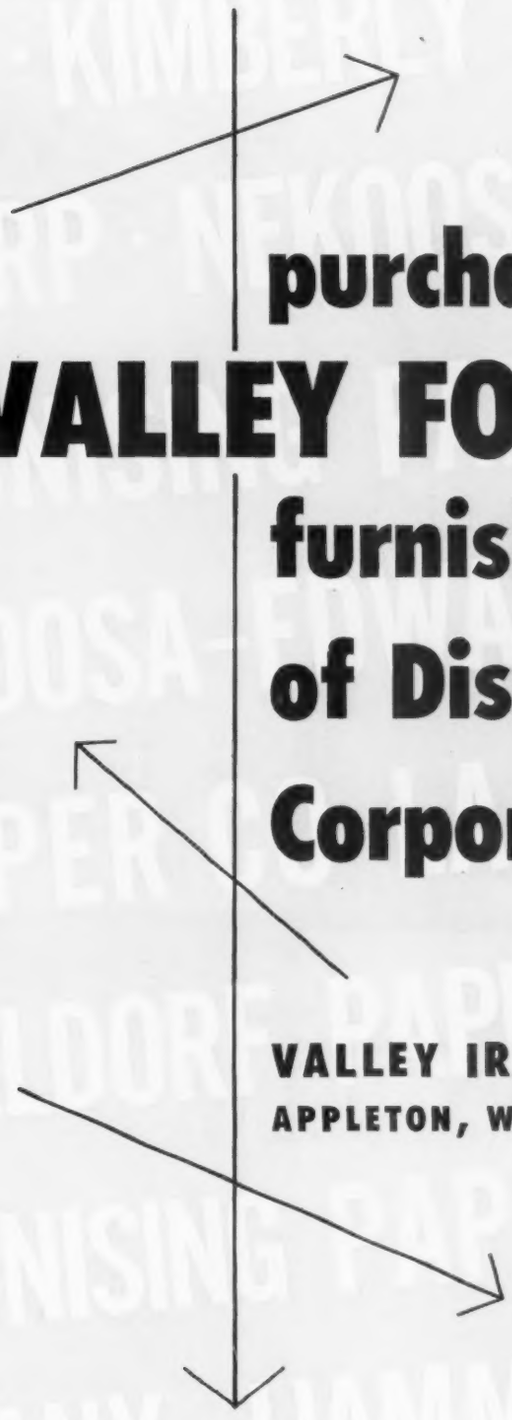
Contributing to this performance are 718 Torrington Spherical Roller Bearings on wire rolls, press felt rolls, top press rolls, paper and felt driers and idlers, calenders, suction couch and press rolls, reels and winders. Inherently self-aligning, these bearings compensate for shaft deflection across the machine and eliminate need for periodic realignment.

Torrington Spherical Roller Bearings are available from stock with straight or tapered bores for shaft or adapter mounting. When you are counting on production, count on Torrington Spherical Roller Bearings for smoother, faster, more economical service from wet end to winder. *The Torrington Company,* South Bend 21, Ind.—and Torrington, Conn.

TORRINGTON BEARINGS

District Offices and Distributors in Principal Cities of United States and Canada

SPHERICAL ROLLER • TAPERED ROLLER • CYLINDRICAL ROLLER • NEEDLE • BALL • NEEDLE ROLLERS • THRUST



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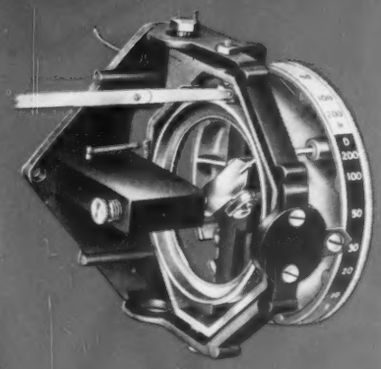
VALLEY FOURDRINIERS

furnish a background of Distinguished Corporate Names

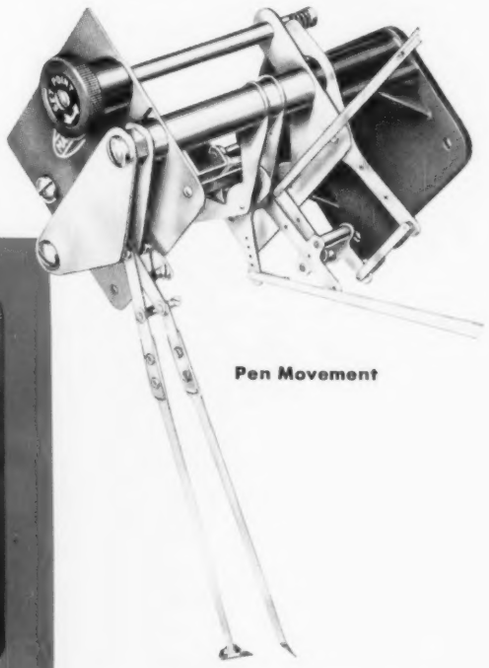
VALLEY IRON WORKS COMPANY
APPLETON, WISCONSIN

Masoneilan 60000 Series . . .

ALL-IN-ONE

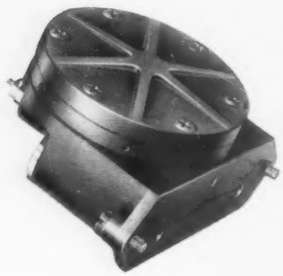


Exclusive gimbal unit combines primary and feed-back motion to provide three types of control in one instrument without change of parts — proportional, on-off and differential gap, each with direct or reverse action.

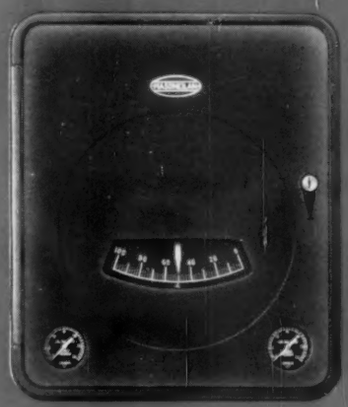


Pen Movement

Ball and socket pivot, common axis of rotation for pen or pointer and set point index, provides maximum flexibility in adding pens and supplementary control functions. Gearless friction drive permits precise adjustment of set point.

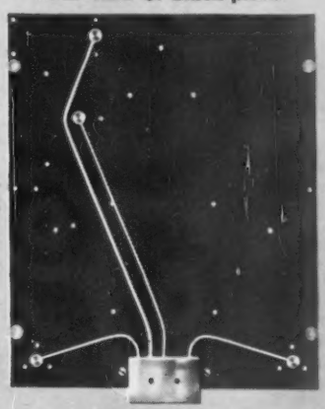


This is the Masoneilan balanced amplifying relay type pilot featuring large capacity, frictionless floating action valve and cleanable sapphire orifice.

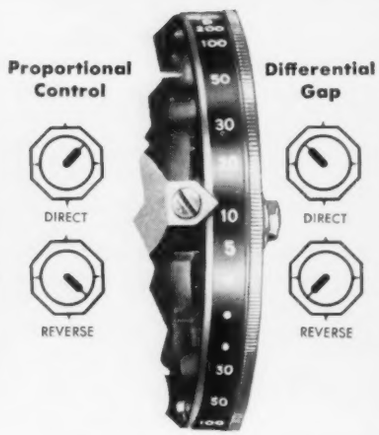


60000 Series includes indicating controllers and transmitters, recorders and recording controllers.

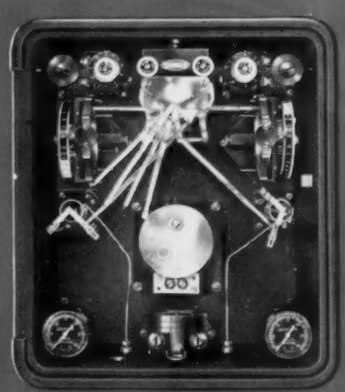
Rear view of black plate



Plug-in pneumatic units plus manifolding of air passages practically eliminate air tubing in case — assure simplicity, ready accessibility.



One simple adjustment of knurled wheel selects type of control and simultaneously adjusts proportional band or width of differential gap.

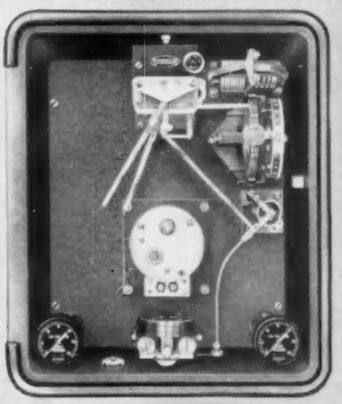


Availability of dual (two complete controllers), duplex (one primary element — two control mechanisms), or dual-selector (two controllers with common pilot) for special purposes — in one case.

PNEUMATIC CONTROLLER

Advanced design features exclusive Gimbal Unit, plug-in pneumatic units, and interchangeable unit subassemblies — enabling selection of variety of control types and supplementary functions IN ONE CASE.

Basic Controller



The basic controller in which all units are readily interchangeable — all adjustments and settings are made without disturbing the chart. Calibration is simple and will not drift.

The Masoneilan 60000 Series offers a basic design instrument with a wide selection of variations and combinations with which you are able to obtain accurate, dependable, pneumatic process control — however complex.

Types of Control include On-Off, Proportional, Differential Gap, Proportional-Reset, Proportional-Derivative, Proportional-Reset-Derivative.

Supplementary Functions include Pneumatic Set, Time Schedule, Differential.

Combinations possible are Dual, Dual Selector and Duplex types.

Recording, Indicating and/or Transmitting varieties are available.

The features illustrated here, plus sturdy construction, ease of calibration and adjustment, accessibility and freedom from maintenance, make the 60000 Series truly the "instrument man's instruments" and the treasurer's friends.

Ask the Mason-Neilan office nearest you for a demonstration of these advantages — or write for catalog.

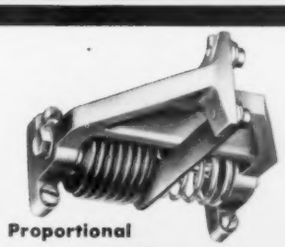
MASON-NEILAN

Division of Worthington Corporation

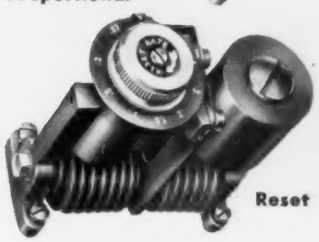
27 Nahatan Street, Norwood, Massachusetts

SEVENTY-FIFTH ANNIVERSARY 75 1882-1957

Sales Offices or Distributors in the Following Cities:
New York • Syracuse • Chicago • St. Louis • Tulsa • Philadelphia • Houston • Atlanta • Cleveland
Cincinnati • Kansas City • Phoenix • Detroit • San Francisco • Louisville • Salt Lake City • El Paso
Albuquerque • Charlotte • Los Angeles • Corpus Christi • Denver • Appleton • Birmingham
New Orleans • Seattle • Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

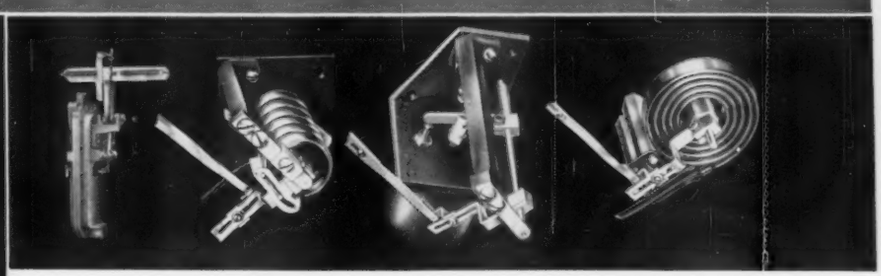


Proportional

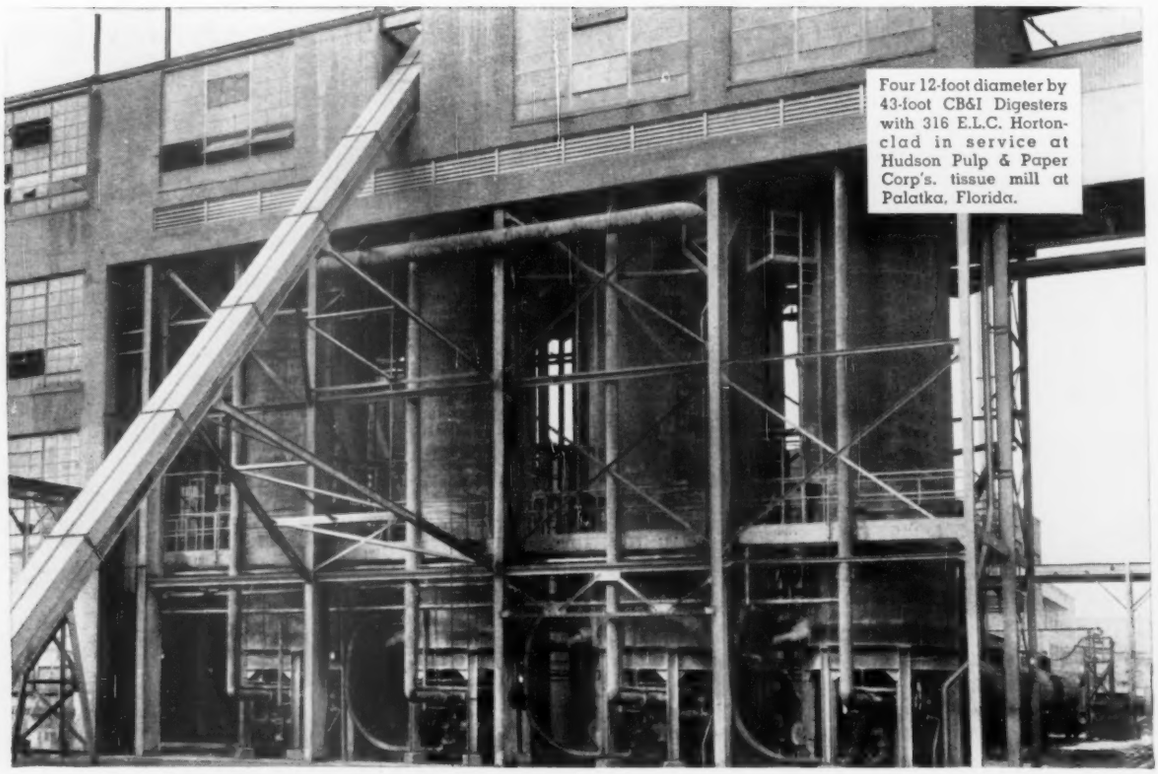


Reset

Addition of reset, derivative, pneumatic set, differential or time schedule functions by means of standard interchangeable subassemblies.



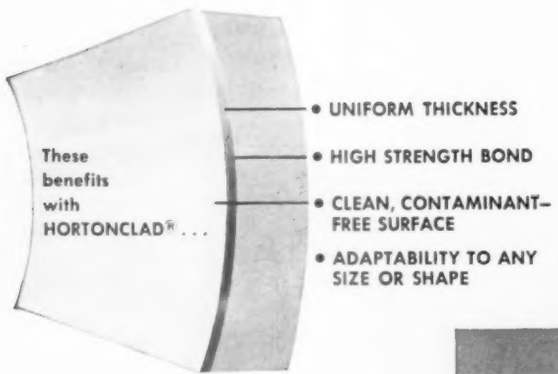
Wide selection of primary elements to suit process requirements — helical or spiral coils; bellows; diaphragm; or mechanical connection such as flow meter shaft.



Four 12-foot diameter by 43-foot CB&I Digesters with 316 E.L.C. Hortonclad in service at Hudson Pulp & Paper Corp's. tissue mill at Palatka, Florida.

HORTONCLAD®

better corrosion protection for clad vessels with high vacuum brazing process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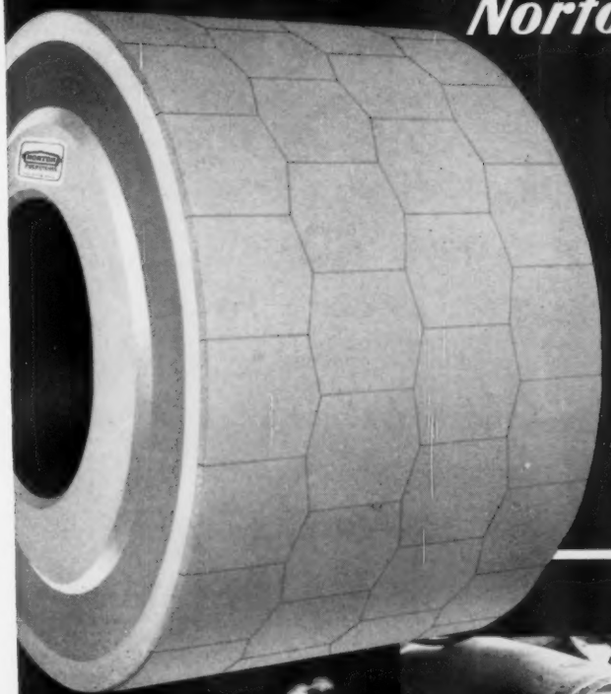

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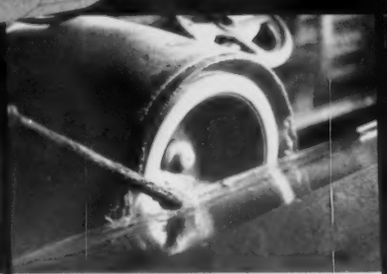

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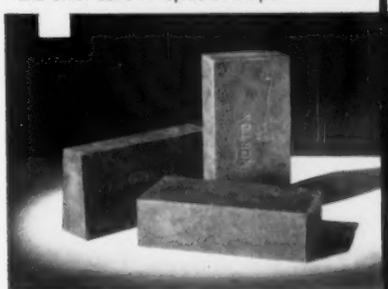

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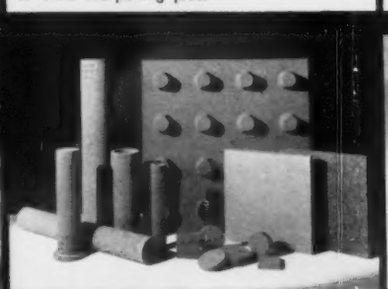

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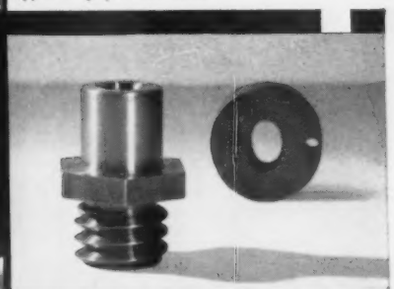

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PULP FROM EUROPE is unloaded at New York harbor.

Photo courtesy Port of New York Authority.

What's Happening in World of Pulp

Patterns of commerce continue to shift. A million tons new capacity are added. More Scandinavian pulp available.

• A half million tons of additional market pulp supply is becoming available to the world during 1957. In 1958, another half million tons will be on the market.

Virtually all of this will be from North American mills. The growth of overseas markets for this pulp has been a primary reason for a great portion of it. If new mills do not actually ship overseas, their construction in some cases, is partly predicated on other mills being released to serve overseas customers.

These increases will be the biggest for market pulp since 1954 when a half million tons came into production in America. There were many expressions of alarm about "over-capacity" and "over-expansion" when the big 1954 mills were being built. Remember?

Elsewhere in this WORLD REVIEW, the individual reports on various countries reveal plans for some expansion in Scandinavian countries and elsewhere, but definite programs do not add up to as much as 200,000 tons at the outside. Most of what is added, probably will be for use in Scandinavia. But Sweden has come forth with the most favorable appraisal in years on its potential timber resources for pulp. Forecasts in Finland are for another 150,000 tons of market pulp in 1957, but it probably will be something short of that figure.

What Leaders Say . . .

In the 1956 WORLD REVIEW, this report on pulp opened with the statement: "Stop, Look and Listen signposts are now being raised all along the new and widening highways of world woodpulp commerce . . . it is time to take a hard look at future expansion, perhaps to slow down the pace a bit! . . . an estimated additional 1,000,000 tons of woodpulp for sale will come into production by 1958."

Many leaders of the industry have spoken words of caution since that was printed. Part of the forecast tonnage has come in; the rest is on the way.

But "a balance of world market supply and requirements can be reached in an orderly manner and within a reasonable time," says Lawson P. Turcotte, president of Puget Sound Pulp & Timber Co., "provided further expansion is delayed, paper facilities are not diverted to pulp, and demand trends continue favorable."

David Luke, president of West Virginia Pulp & Paper Co., and R. M. Buckley, president of East Texas Pulp & Paper Co., both say that "the right timing" is going to be the key to whether future expansion creates any serious trouble, and Mr. Buckley figures that demand is going to catch up with capacity coming in, perhaps in two or three years.

John H. Hinman, president of International Paper Co., says: "In a growth industry, it is desirable to have some margin of capacity over immediate demand with which to develop new business. Otherwise, you cannot realize your full growth potential. The kind of all-out operation we have been experiencing in recent years is abnormal and unhealthy."

Roy King Ferguson, chairman of St. Regis Co., says: "We have been through this sort of thing before. I believe that new capacity can be absorbed better today than at any other time in my 40 years in the industry."

Russell Flom, director of pulp, paper and board sales, Marathon Corp., says: "We can look to the future with optimism because of growing population and increasing uses. But courage, intelligence and statesmanship will be needed in the near future."

Samuel R. Sutphin, executive vice president, Beveridge Paper Co., and 1956-7 president of the Assn. of Pulp Consumers, Inc., says: "Indicated new additional consuming capacity comes very close to balancing the new paper grade market pulp tonnage coming into production. If the European paper and paperboard industry and the rayon industry return to their normal growth trends, we once again could be in a tight supply position."

L. Keville Larson, sales mgr., pulp division, Weyerhaeuser Timber Co., says: "Segments of the fiber economy are not actually in basic conflict; in basic function, they are designed to complement. Fires in the channels of

Highlights of World Woodpulp Picture— Present and Future

- One million more tons coming into production in 1957-58.
- Leaders say balance can be reached, "right timing" is important.
- Washington alerts industry to a serious situation.
- North America dominates production; Europe dominates demand.
- Sweden, No. 1 exporter, surprises with bigger shipments.
- Strike slowed down Finland, but now it is able to boost exports.
- Big cargo ships are handicap to North American exporters.
- Demand slides off in Britain, France and West Germany.
- Consumption potential in United States increases.
- A key to future—paper pulp tonnage from dissolving mills.
- Seven new market pulp suppliers in 1957-58.
- Captive pulp mills supply larger share of fiber needs.
- Packaging, building and households—three great markets.
- Aluminum, steel and plastics become formidable competitors.

distribution can be far more destructive of economic values than forest fires. Each of us must douse his own sparks before they spread."

James L. Ritchie, executive director, U.S. Pulp Producers Association Inc., says: "For a time there was concern that the industry's accelerating expansion program might invite another series of lean years. That prospect seems less likely. There have been many evidences of retrenchment. Proposals involving about 5,000,000 tons of North American pulp capacity appear not to have progressed during recent months."

The pulp and paper industry in America has been alerted to the danger signals. In May this year, top "brass" of the U.S. industry was called to Washington, D.C., to see Commerce Department's long "hush-hush" survey of future demand for pulp, paper and paperboard, prepared at the request of a Congressional committee. Could the whole industry—pulp and paper—find consumers for close to a 40% overall increase in capacity by 1959? A faster rate of paper and paperboard expansion has been planned for the years 1957, 1958 and 1959 than any previous years. In these three years about 5,000,000 tons are projected. Perhaps some of this would be cancelled or delayed.

Changing Patterns in World Trade . . .

Of the paper grade market pulp in world trade, North American mills produce 45%. Over 60% of this goes overeas, the rest is consumed in the United States. Thus, North American continues in its relatively new role of being in control of world market pulp supply. It replaced Scandinavia in this role three years ago. Europe is now the dominant area on the demand side. In Britain, alone, market pulp imports comprise 95% of the total woodpulp consumed.

"If the past is any criterion, the U.S. market for paper grade pulps, for the foreseeable future, is not likely to be a dynamic one," says Mr. Turcotte.

Between 1950 and 1955, purchases of pulp in the rest of the world increased over 50%. In 1956 the rest of the world, outside the U.S.A., consumed 61% of the Free World's supply of paper grade market pulps. However, deliveries to Western Europe fell off last year, deliveries of United States pulp to Europe declined 21%.

One-fourth of the Free World's chemical market pulps are dissolving. Today, dissolving pulp has become what is essentially a different industry. Rex Vincent, elsewhere in this WORLD REVIEW, analyzes that field for PULP & PAPER readers. Of dissolving pulp shipments, 42% went to

New Pulp Capacity Coming In . . . at Hinton . . .
New view of North Western Pulp & Power Ltd's 430-ton double chlorine dioxide bleached kraft mill at Hinton, Alta. Made first market Alberta Hi-Brite in May 1957.

New Pulp Capacity Coming In . . . at Cosmopolis
Weyerhaeuser paper grade sulfite pulp was first made at Cosmopolis, Wash., on March 13, 1957. This new plant employs magnesia base pulping and recovery system.

New Pulp Capacity Coming In . . . at Crofton
October 1957 is scheduled start-up time for Crofton Kraft bleached kraft pulp from B.C. Forest Products Inc. at Crofton, B.C., marketed by Mead Pulp Sales.

U.S. consumers, the rest elsewhere in the world.

How Leading Nations Rank

What happened in the ranking of the principal exporting nations in world pulp commerce in 1956?

1. SWEDEN. Took a firmer grip on top place, setting new records in dissolving, paper grade chemical pulp and groundwood exports, while other challengers—Canada, Finland, U.S.A. and Norway, were down slightly from 1955, or just holding their own. PULP & PAPER's figures direct from the Swedish Cellulose Assn. in Stockholm show a record 2,807,695 tons of all kinds of woodpulp exported in 1956, up from 2,537,987 in 1955. This included 416,208 tons of dissolving, up from 405,146. Groundwood exports of 475,923 tons was a 52,000 tons increase. All paper grade pulp exports totalled 2,391,000 tons, up 258,000. This far exceeded expected Swedish exports.

2. CANADA. Total chemical pulps shipped by Canada in 1956—2,092,256 tons as compared with 2,083,067 in 1955. Of this, dissolving pulps totaled 331,219 tons in 1956, up only about 20,000 tons from 1955. So, Canada is still the only serious challenger to Sweden as an exporter. Because of greater resources, it undoubtedly will oust Sweden from top place in some future year—but it was closer in 1955 than in 1956.

3. FINLAND. Well back of the two leaders, yet also far ahead of the U.S.A. and Norway, the Finns shipped 1,237,332 tons of chemical pulps in 1956, including 156,599 tons of dissolving. Due to a general strike in Finland, this was down a fraction from 1955. Its total of chemical pulp exports in 1955 was 1,239,698 tons, of which 160,259 were dissolving grades. Add to this, about 204,000 tons of mechanical pulp exported in 1956, so its total pulp exports were 1,450,000 tons. It had been expected that Finland would show a substantial increase in exports in 1956, but the long strike prevented this.

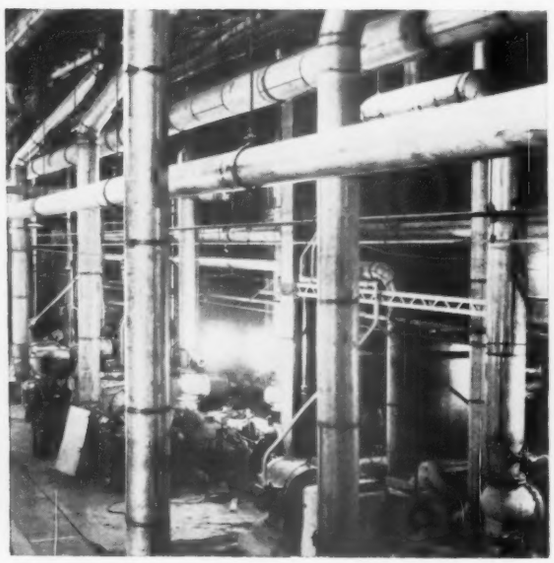
4. NORWAY. Despite a three weeks' general strike in July, its 1956 record was about as good as the previous year. It shipped more mechanical pulp, less chemical pulp. In all chemical pulps, Norway exported 305,692 tons in 1956, of which 121,348 tons were dissolving. The total was 323,168 in 1955, including 131,427 tons dissolving. Norway ships more groundwood, however. This total 474,000 tons in 1956, as compared with only 443,000 in 1955.

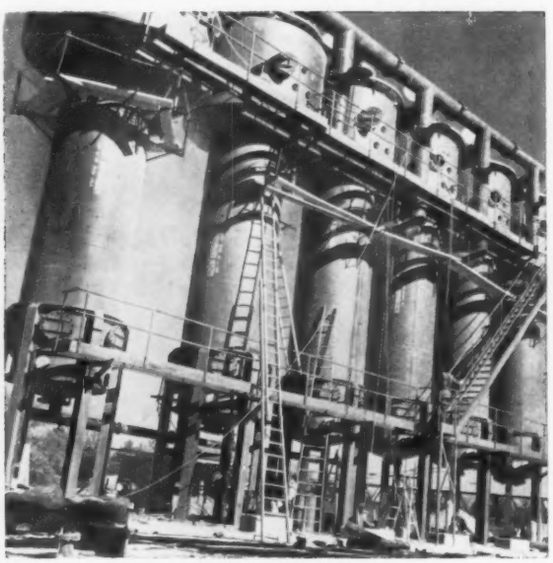
5. UNITED STATES. The United States producers are interested only in chemical pulp exports, and in this field it would rank as No. 4 nation, ahead of Norway. The total U.S. exports of all chemical woodpulps, however, fell off from 623,254 tons in 1955—an all-time high record for this country—to 518,653 tons in 1956. But both past years were substantially over any previous years in the U.S. industry's history. A freak record of

PAPER-GRADE WOODPULP IMPORTS
(In thousands of short tons)

	Great Britain		Germany		France	
	1956	1955	1956	1955	1956	1955
Bleached Sulfite	248.2	234.8	75.6	60.6	111.2	109.7
Bleached Sulfate	174.0#	183.5#	149.5*	137.2*	58.8	60.3
Unbleached Sulfite	545.2	605.4	57.1	64.8	144.0	129.4
Unbleached Sulfate	434.6	438.1	175.2	169.7	158.4	140.7
Other Chemical	—	—	—	—	25.0	25.7
Total Chemical	1,402.0	1461.8	457.4	432.3	497.4	465.8
Mechanical & Other	814.4	760.8	22.6	26.1	119.1	110.8
Total	2,216.4	2222.6	480.0	458.4	616.5	576.6
% Change:						
Chemical Pulp	−4.1%		+5.8%		+6.8%	
Total Pulp	−0.3%		+4.7%		+10.4%	

Includes undisclosed amount of soda pulp.
* Believed to include some sulfate dissolving pulp.
Sources: British Wood Pulp Assn.; Treuhandstelle der Zellstoff und Papierindustrie; Union Industrielle des Fabricants de Papiers et Cartons.





And More New Pulp Capacity Comes In . . . at Dryden . . . and Demopolis

In new bleach plant of Dryden Paper Co., Dryden, Ont., are these extensive lines of stainless steel piping. Stebbins-lined Kamyr bleach towers in background. Dryden Bleached Sulfate went on market in spring of 1957.

These Goslin-Birmingham evaporators are part of recovery system in new bleached kraft pulp mill of Gulf States Paper Corp., Demopolis, Ala., going into production in early summer with new bleached E-Z kraft pulp.

481,000 tons in 1940, when Nazi submarines blockaded Sweden, had stood until 1955. But compare present shipments with from only 39,000 to 212,000 in the 1946-1953 years. A hint of what was coming—442,000 in 1954. It should be pointed out that 1956 exports by the U.S. included 198,022 tons of dissolving pulps, up slightly from the 1955 figure of 194,132.

6. AUSTRIA. Market pulp is a major industry of this little nation, as shown by its increased chemical pulp exports of 206,845 tons in 1956, an increase of nearly 24,000 tons. In addition 10,000 tons of mechanical pulps were exported. The dissolving grades included in chemical pulps totaled 31,384 in 1956, an increase of 3,400 tons.

7. GERMAN FEDERATED REPUBLIC. This is West Germany, whose exports continue to rise, though totaling only 51,103 tons of chemical pulps in 1956, up 1,500 tons. This included 23,052 tons of dissolving—nearly half the total, an increase of 7,000 tons of dissolving pulps. No mechanical pulp exports were listed in FAO figures.

Each exporting from 10,000 to 25,000 tons in 1956 were Belgium, New Zealand, Portugal, Yugoslavia and Switzerland. The Swiss doubled their woodpulp exports to 13,584 tons. Holland ships substantial amounts of straw market pulp to Britain, especially. Japan, one time pulp exporter, has become an importer. Russia and its satellites do some exporting. But Iron Curtain countries, on balance, are importers.

Observations by PULP & PAPER in Europe . . .

A PULP & PAPER staff member traveling in Europe reports that the larger pulp buying organizations in Europe now have, and prefer, firm contracts covering six months periods. As of early April, second quarter pulp prices in Britain and the Continent were practically unchanged from first quarter.

PULP & PAPER's staff member said as far as small mills are concerned, they buy on quarterly contracts. He took a trip down the Thames and noted that only small cargo vessels and lighters can get into many of the docks of pulp and paper companies. North American pulps must go into larger ports, as they come on big ships, while the Scandinavian shipments are in small ships. This is a serious problem for North American producers.

Britain, France and West Germany combined consume about three-fourths of the total woodpulp exports to European countries, but the demand

MARKET WOODPULP FOR U.S.A.—TOTAL ALL GRADES
(In thousands of short tons)

	Production	Imports	Exports	New Supply
1937	1,084	2,195	323	2,956
1938	733	1,551	140	2,144
1939	1,007	1,820	140	2,687
1940	1,815	990	481	2,324
1941	1,988	850	329	2,509
1942	2,116	933	378	2,671
1943	1,574	971	301	2,244
1944	1,684	743	218	2,209
1945	1,590	1,395	135	2,850
1946	1,330	1,414	39	2,705
1947	1,504	1,876	130	3,250
1948	1,502	1,738	94	3,146
1949	1,321	1,301	122	2,500
1950	1,647	1,911	96	3,462
1951	1,907	1,832	202	3,537
1952	1,849	1,401	212	3,038
1953	1,784	1,578	162	3,200
1954	2,179	1,486	443	3,222
1955	2,707	1,612	635	3,684
1956	2,691	1,666	534	3,823

U. S. Pulp Producers Assn., Inc.

MARKET WOODPULP FOR U.S.A.—TOTAL PAPER GRADES
(In thousands of short tons)

	Production	Imports	Exports	New Supply
1937	807	2,103	149	2,761
1938	583	1,486	77	1,992
1939	849	1,732	92	2,489
1940	1,490	876	366	2,000
1941	1,730	729	295	2,164
1942	1,719	799	349	2,169
1943	1,194	842	278	1,758
1944	1,243	610	207	1,646
1945	1,212	1,249	122	2,339
1946	1,018	1,212	31	2,199
1947	1,099	1,627	119	2,607
1948	1,086	1,503	76	2,513
1949	953	1,147	97	2,003
1950	1,175	1,674	68	2,781
1951	1,302	1,615	171	2,746
1952	1,173	1,222	147	2,248
1953	1,118	1,397	93	2,422
1954	1,418	1,311	292	2,437
1955	1,737	1,450	441	2,746
1956	1,764	1,530	333	2,961

U. S. Pulp Producers Assn., Inc.

ORIGIN OF U.S.A. MARKET WOODPULP—ALL GRADES
(In thousands of short tons)

	From U.S.A.	From Canada	From Europe	Total Supply	As % of Total U.S.A.	Canada	Europe
1937	761	512	1,683	2,956	26%	17%	57%
1947	1,374	1,082	794	3,250	42	33	25
1954	1,737	1,113	372	3,222	54	35	11
1955	2,073	1,262	349	3,684	56	34	10
1956	2,157	1,288	378	3,823	56	34	10

U. S. Pulp Producers Assn., Inc.

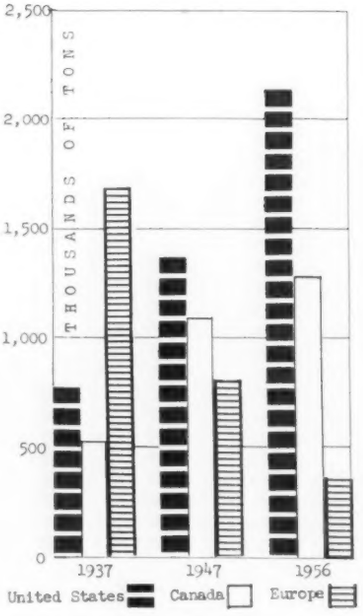
from these nations was running lower in 1957 than it did in 1956. The closing of the Suez Canal did not have any material effect on pulp production or consumption. Paper mills of Europe received all the fuel they required. Monetary problems in France, which appeared serious in May of 1957, could have more influence.

Outlook for Pulp Consumption . . .

Reed R. Porter, executive secretary of the Association of Pulp Consumers, points out that capacity to consume is increasing in the U.S. but that some of its sources of pulp are uncertain. "We must recognize that the consumption potential in the United States has been enlarged considerably by the many mill modernization and enlargement programs which have been undertaken during the past two years," says Mr. Porter, "Furthermore, considerable pulp consumed in 1955 and 1956 originated from sources which may prove unreliable under emergency conditions or in periods of prosperity in Europe or the rayon industry. I refer to the North American drop in exports, increased European imports, and to the huge tonnage supplied by the dissolving mills over and above capacity allocations for paper-grade pulp. Fortunately, this tonnage was available to us in the past two years. In this connection, I should like to emphasize that we question the permanence only of that tonnage which finds its way to our market in periods of slack demand abroad and in the rayon market.

"We were quite lucky in 1956, that we did not experience a really tight market," went on Mr. Porter, "With our own needs picking up sharply and little in the way of new supply, we were fortunate that the European boom began leveling off in the fall of 1955, with England being the first to feel it. Then in 1956, other large pulp consuming nations also slowed in tempo, although some gains (about 6%) were registered by both Germany and France. These gains in consumption were more than offset, however, by increased Swedish pulp exports, which incidentally, far exceeded forecasts.

At the end of 1956, Finland was back in stride, producing about 14,000 tons per month more market pulp than in the corresponding months of 1955; Sweden's output of market pulp was averaging over 10,000 tons per month above production 12 months previous. On a yearly basis, these are hefty increases. Recent communications from both countries reflect an atmosphere of caution and apprehension caused by the implications of the Suez crisis. But—both Finland and Sweden are able to increase their exports in 1957 as much as 150,000 to 200,000 tons if they do desire.



Origin of Market Pulp Supply for the United States

New Mills Coming into Production . . .

During 1956, consumption of paper grade market pulp in the U.S. set a new all-time record, totaling 2,977,000 tons. This tonnage figure was over 150,000 tons above the 1955 consumption and about 75,000 tons higher than the previous record made in the war year of 1950.

Here are new market pulp mills coming into production in 1957 and early 1958. Actual startup dates are given for the first half of 1957; others are expected startup dates:

Mill	Tons Annual Capacity	Startup Date
Dryden Paper Co. (Dryden, Ont.)		
Bleached sulfate	42,500	Feb. 1957
Unbleached sulfate	25,000	Jan. 1957
Northwestern Pulp & Power Co. (St. Regis) (Hinton, Alta.)		
Bleached sulfate	150,000	Apr. 1957
Weyerhaeuser Timber Co. (Grays Harbor, Wash.)		
Bleached sulfate	150,000	Mar. 1957
Gulf States Paper Corp. (Demopolis, Ala.)		
Bleached sulfate	100,000	July 1957
B. C. Forest Products, Inc. (Crofton, B.C.)		
Bleached sulfate	145,000	Oct. 1957
Thurso Pulp & Paper Co. (Thurso, Que.)		
Bleached sulfate	70,000	Jan. 1958
Eastern Corp. (Lincoln, Me.)		
Bleached sulfate	25,000	Jan. 1958
	707,500	

Significant Trends . . .

Mr. Ritchie, of the Pulp Producers, cites important changes in North America:

"During the past 20 years, and particularly during the post-war period, there has been a sharp trend toward integration in the domestic industry. In 1948, for the first time in history, captive woodpulp became the dominant fiber in United States paper and paperboard manufacture.

"Within the next five years, if recent trends continue, captive woodpulp will supply two-thirds of the paper industry's fibrous raw materials requirement and purchased fibers of all types one-third—a precise reversal of the pre-war pattern. Further, of the total market woodpulp requirement, overseas supply sources now furnish 10% instead of 60%, and at an average production cost that is reported to be higher than ours.

"These very significant changes in the pattern of fiber supply should also help to insure a more favorable competitive climate within the domestic fiber economy. Through integration and through the achievement of continental self-sufficiency in market pulp, some of the competitive pressures that rocked pulp markets and upset the entire fiber economy for so many years are fortunately, no longer with us. Captive pulp will supply a larger and larger share of our total fiber requirement; the cost of manufacturing captive pulp, obviously, is less volatile than the cost of procuring purchased fiber.

"Further, market pulp should be far less volatile in the future than it has been in the past; the world's producers are more evenly matched in competitive strength than they once were. The spread in fiber costs, captive and market, domestic and for-

eign, has narrowed considerably in recent years; advantages in fiber cost should no longer be the weapon for market exploitation that it once was.

"For woodpulp, the competitive outlook should be relatively better than for other fibers. As a raw material for papermaking, woodpulp, for many years, has been making relative gains at the expense of other fibers. Historically, one-sixth of the growth in woodpulp consumption in paper and paperboard manufacture has been attributable to changes in the furnish pattern of paper and board."

Three Major Mass Markets . . .

"Almost three-fourths of the paper industry's growth since 1937 has been concentrated in three major mass markets—packaging, building and household paper products," said Mr. Ritchie. "It has been the capture of important segments of these three mass markets that has contributed most to the growth of per capita consumption. As a factor in the growth of total paper and paperboard requirements over the past 18 years, the rise in per capita consumption has been three times as important as the growth of population. It would be a mistake to assume, however, that the historical pattern of growth in per capita consumption will automatically set the pattern of growth for future demand. Reliance upon straightline projections of historical trends, we believe, can be dangerous, for the economic and political forces that shaped these historical trends will certainly not repeat themselves.

Competitors of Pulp and Paper . . .

Mr. Ritchie predicts more aggressive inter-industry competition in major mass markets. Much of the historical growth of the fiber economy has been attributable to the success of its attack on other people's mass markets; other people are now preparing to counter-attack.

He noted that production of aluminum is currently running over 10 times pre-war. Current plans call for a 60% increase in the world's production of aluminum by 1960. The markets that are the major targets for this new supply are building, packaging and automobiles. The first two targets will affect the fiber economy directly, the third indirectly.

Steel has a major expansion program and is planning a campaign to displace packaging by the employment of steel racks for the transport of such items as refrigerators, stoves, washers, televisions, etc. If completely successful, it would cost the fiber economy 700,000 tons of packaging business. Steel seeks to replace fiber containers and shipping sacks with facilities for the bulk transport of cement, flour, chemicals of all kinds.

Per capita consumption of plastics has tripled in the past ten years. The hope has been expressed that per capita consumption of plastics, in the next eight or nine years, will rise from the current level of 23 pounds to a level equal to the current per capita consumption of paper. Much has been said about the opportunities that lie ahead for combinations of paper and plastics, Mr. Ritchie notes. This could reduce woodpulp consumption in markets that paper has already been serving.

In the rayon industry, there is the growing competition of synthetics. In printing grades, there is the growing competition of other media, and also the trend toward coated papers which may tend to reduce unit woodpulp requirements. In household paper products, there will be growing competition from foils, films, non-woven textiles, plastics and light metals.

ORIGIN OF U.S.A. MARKET WOODPULP—PAPER GRADES

(In thousands of short tons)

	From U.S.A.	From Canada	From Europe	Total Supply	As % of Total U.S.A.	Canada	Europe
1937	658	420	1,683	2,761	24%	15%	61%
1947	980	857	770	2,607	38	33	29
1954	1,127	940	370	2,437	46	39	15
1955	1,297	1,101	348	2,746	47	40	13
1956	1,430	1,155	376	2,961	48	39	13

U. S. Pulp Producers Assn., Inc.

New Report on Europe's Needs

Paris

• The OEEC (Organization for European Economic Organization, an offshoot of the United Nations) has come out with a new forecast of European pulp and paper trends in which it estimates a 20% increase in pulp output as well as paper and paper-board production by 1960.

The dissolving pulp increase it estimates at 15%.

It is interesting that in this new OEEC report, however, that the experts figure on a need for exportable surpluses of woodpulp from the United States to meet European needs. Apparently it figures on about the same rate of exports to Europe of North American pulp as at present. By counting in these North American supplies, a 20% increase in paper and paperboard consumption can be fulfilled.

It sees no "significant increases" in North American shipments, but if that increase in consumption is coming, it is always a possibility that the OEEC understimates how much of the market the North American mills may be supplying by 1960.

In 1954, the OEEC made some similar forecasts of European needs up to 1960, now out of date, in which it placed much less reliance on needs for North American woodpulp. In fact, it made forecasts in 1954 which seemed to indicate a belief that Europe would be more or less self-sufficient. This viewpoint is now changed. (See 1956 WORLD REVIEW NUMBER, page 79).

The new OEEC report examines basic trends in the European pulp and paper industry during the 1950-55 period, and speculates on the potentialities of European supply for the period from 1955 to 1960. Its conclusions with respect to the outlook for European supply are much more optimistic than those suggested by earlier studies of European wood availabilities.

With respect to potential European supply trends in the 1956-60 period, the report reaches the following conclusions:

SWEDEN—Improvements in the growth and utilization of Sweden's wood supply would permit an increase of one million metric tons in Swedish production between 1955 and 1960. One-half of this potential increase will be in the form of market woodpulp for export; the remaining half will be available for integrated paper and paperboard production within Sweden.

NORWAY—The potential increase in Norwegian production is estimated at 175,000 metric tons; of this total increase, 135,000 tons will be used to supply "own use" requirements.

FINLAND—Present forest resources will allow an increase of over two million tons in Finland's annual woodpulp capacity. About two-thirds of the wood reserves necessary to permit this increase in wood production are immediately available. The potential increase is, accordingly, 1 1/3 million tons. Such an increase, however, would substantially reduce the quantities of pulpwood available for ex-

port. Scheduled capacity increases from 1956 to 1958 total 400,000 tons, a substantial proportion of which is for integrated use. The report suggests that shortages of capital may prevent the expansion of pulp facilities in Finland from going beyond this level in the 1955-60 period.

UNITED KINGDOM—The reforestation program currently underway is not likely to result in increases in woodpulp production in the 1955-60 period.

CONTINENTAL EUROPE—An annual increase of 2½% in woodpulp productive capacity is projected. On this basis, the total increase in annual capacity over the 1955-60 period would be 500,000 tons.

These reports may be compared with PULP & PAPER's own direct reports Europe elsewhere in the section in the WORLD REVIEW which carries the reports from individual countries.

With respect to the potentials of European woodpulp supply, the OEEC report reaches the following conclusion:

"It may be assumed that the output of woodpulp in the OEEC member countries and Finland could potentially be increased between 1955 and 1960 by more than two million tons, i.e., 20% at least, thus making it possible to increase production of pulp products and/or exports of woodpulp within this limit."

With respect to the prospective balance of European supply and requirements, the report reaches the following conclusion:

"The increase in consumption of paper and board in OEEC member countries between 1955 and 1960 may be expected to be of the order of 20% for paper and board (or in terms of woodpulp equivalent roughly two million tons) and 15% (150,000 tons) for dissolving pulp. There seems to be no doubt that the raw material resources and production capacity of the member countries and Finland, together with the exportable surplus which will be available from North America, will enable an increase in consumption on this scale to be met."

The analysis appears to suggest that the growth of European supply will keep pace with the growth of European requirements, and that significant increases in relative dependence on North American supply sources are not likely to develop over the course of the next few years.

World Pulp Shipments—1956 vs 1955

(shipments of 25,000 tons and greater)

Country	1956	1955
From Scandinavia		
Total	4,910,274	4,698,544
to:		
United Kingdom	1,888,536	1,897,303
France	607,689	552,970
Germany, East & West	429,136	388,898
United States	355,209	348,336
Italy	257,524	214,435
Netherlands	226,406	394,120
Belgium	154,228	143,881
Brazil	148,542	129,695
Argentina	145,840	143,498
Spain	93,851	98,445
Denmark	92,734	95,584
Poland	65,449	51,422
U.S.S.R.	63,268	17,663
Australia	59,444	62,468
Switzerland	59,233	47,103
Greece	35,382	22,918
Chile	28,734	23,967
Porugal	25,848	23,975
From United States		
Total	518,653	632,914
to:		
United Kingdom	161,497	204,104
Japan	71,034	43,809
Canada	64,993	60,853
West Germany	49,429	63,180
Mexico	38,121	50,280
Cuba	29,897	25,883
France	26,439	29,674
From Canada		
Total	2,374,012	2,312,369
to:		
United States	1,914,634	1,864,721
United Kingdom	244,163	237,120
France	25,791	33,699
From Australia		
Total	206,845	192,146
to:		
Italy	91,053	84,440
West Germany	66,182	60,087

Let's Not Bring Back 1939!

BY FRANK M. WARREN
North American Woodpulp Representative for Continental Europe

• Evidence appears to show that during the past 12 months or so, many North American exporters of woodpulp to the European markets have adopted orderly selling procedures, but there are notable exceptions. Somewhat short-sighted ideas are being followed which may lead to unsatisfactory results for sellers and consumers alike.

It would be unfortunate if there were resumption of pre-1939 selling methods, now so much more questionable because of the enormous stakes involved.

North American sales of woodpulp to Europe have grown fivefold since 1937. The pre-1939 issues have thus been greatly magnified, in addition to which North American woodpulp supply has become an essential adjunct to Scandinavian and domestic woodpulp supply in all European markets.

Many, if not all, European consumers of woodpulp have hoped that an era of unprecedented stability in the world pulp and paper industry had been ushered in by the far-sighted selling policies of the majority of North American woodpulp producers in the North American market which, because of its size, influences all other markets.

The stability of North American contract woodpulp prices during the past ten years or so is indeed an achievement calling for much self-congratulation among North American woodpulp producers and consumers. This stability has attracted the necessary capital, at reasonable rates, to create new productive facilities to meet rising demand caused by the stability itself. Far-sighted statesmanship in business as in politics can create opportunities and prosperity in an unending cycle.

It is a paradox, however, that not all woodpulp producers seem beholden to a policy of stability with regard to their exports to the European markets, although it would have been logical to expect that such a proven policy would be followed rather than a more opportunistic one.

Some Marketing Errors . . .

The past months have witnessed some marketing errors; for instance, there has been evidence of:

Price cutting,

Price discrimination between small and large consumers,

Quantity discounts,

Ever-lengthening times of payment,

Discounts for cash payment,

Buyers' commissions,

Multiple representatives in a given market, each quoting a different price,

Price quotations made to domestic re-sellers for markets for which direct local spokesmen had already been quoted.

The above would indicate a lack of concern with stability, and not a long-term interest in a market. It is to be remembered that in the mind of a buyer who has "struck a bargain" there is always the feeling that someone may have struck a better one. The spirit finally engendered in the mind of a buyer is that there never is any end to the bargaining possibilities. To bargain is agreeable. But isn't it even better to sell?

It is, I believe, important to point out that, in general, the European consumer is not actively seeking price advantages. Naturally, when these are offered, he will not only take them, but also attempt to have every supplier of woodpulp accept the same conditions. However, the primary consideration of each European mill is

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to ascertain to the best of its ability that none of its competitors pays less for a given grade of woodpulp than it does. Therefore, an open and stable policy of pricing—assuring all consumers, large or small, in a given area that they are all paying the same price for a stated grade of woodpulp—is the only one capable of meeting the present requirements and future hopes of such consumers.

It is a truism that in order to sell one must be competitive. How competitive? That is the problem.

There have been many indications in recent months that some North American sellers of woodpulp in Europe are more interested in making a sale than in the future stability and growth of the European market. Why should one be always "competitive," always ready to "make a more attractive deal," weak on prices and terms of payment, regardless of the effect on a principal's or customer's stake in the market? This "après moi le déluge" type of selling is, I maintain, nothing more than unimaginative merchandising and is an excellent method of wrecking the stability of the overseas, and finally the domestic, woodpulp markets.

The European Point of View . . .

Many of our woodpulp salesmen seem to forget that Sweden and Finland rely on their wood industry for a large part of their economic life. (This is true to a lesser extent for Norway and Austria.) These countries dominate the market woodpulp industry in Europe, and in recent years have exercised prudence and stability in prices. Factors leading to this stability are not only rising costs, the unhappy repercussions of the Korean War price increases, but also the growing importance of North American woodpulp imports.

This stability has resulted in a period of health, modernization, and unprecedented development for Europe's paper industry. This is the very situation which makes Europe attractive for North American woodpulp. Unsound selling practices on the part of North American sellers would inevitably upset any stability and adversely affect the economy of Finland and Sweden.

There is also the possibility, which must be seriously considered, that disruptive practices of exports could lead those countries which are developing, on perhaps an uneconomic basis to be sure, their own pulp industries—such as France, Italy, Holland, Germany, etc.—to place a high duty on North American woodpulp.

A very laudable effort has been made by some of the United States woodpulp producing mills with respect to export. An association has been formed whose purpose is the exchange of information regarding overseas markets and the setting up of minimum prices of such markets.

Proposes a Solution . . .

I realize that I have brought out only some aspects of the problem, not the solution. One should be evolved. Its main elements might, in my opinion, consist of the setting up of common sales practice and a standard export sales contract somewhat akin to the type of sales contract now used in North America by North American woodpulp producers. A policy then could be laid down by the producer-seller to his agents which would be based on the sound principles of service, and stability of price and quality, which have been so successful on the North American market.

The entire export market would be strengthened by this approach. Confidence would develop between producer and consumer. What is of prime importance, however, is that Scandinavian and European woodpulp suppliers to the overseas markets might, in view of the evident policy of stability followed by North American exporters, be persuaded to lay aside some of their fears concerning North American competitive tactics.

Only when we concentrate on bringing stability to overseas markets can we hope for a continued sound development of our market woodpulp export sales and domestic sales, as well.

Why a Modest Surplus Is Good

BY DAVID L. LUKE, JR.
President, American Paper and Pulp Assn. and President, West Virginia Pulp & Paper Co.

● Pulp is the hub of the wheel around which our industry revolves. This seems to be just as true whether the pulp is that which is being produced, or that which is being consumed. It's still pulp that's the hub of our wheel.

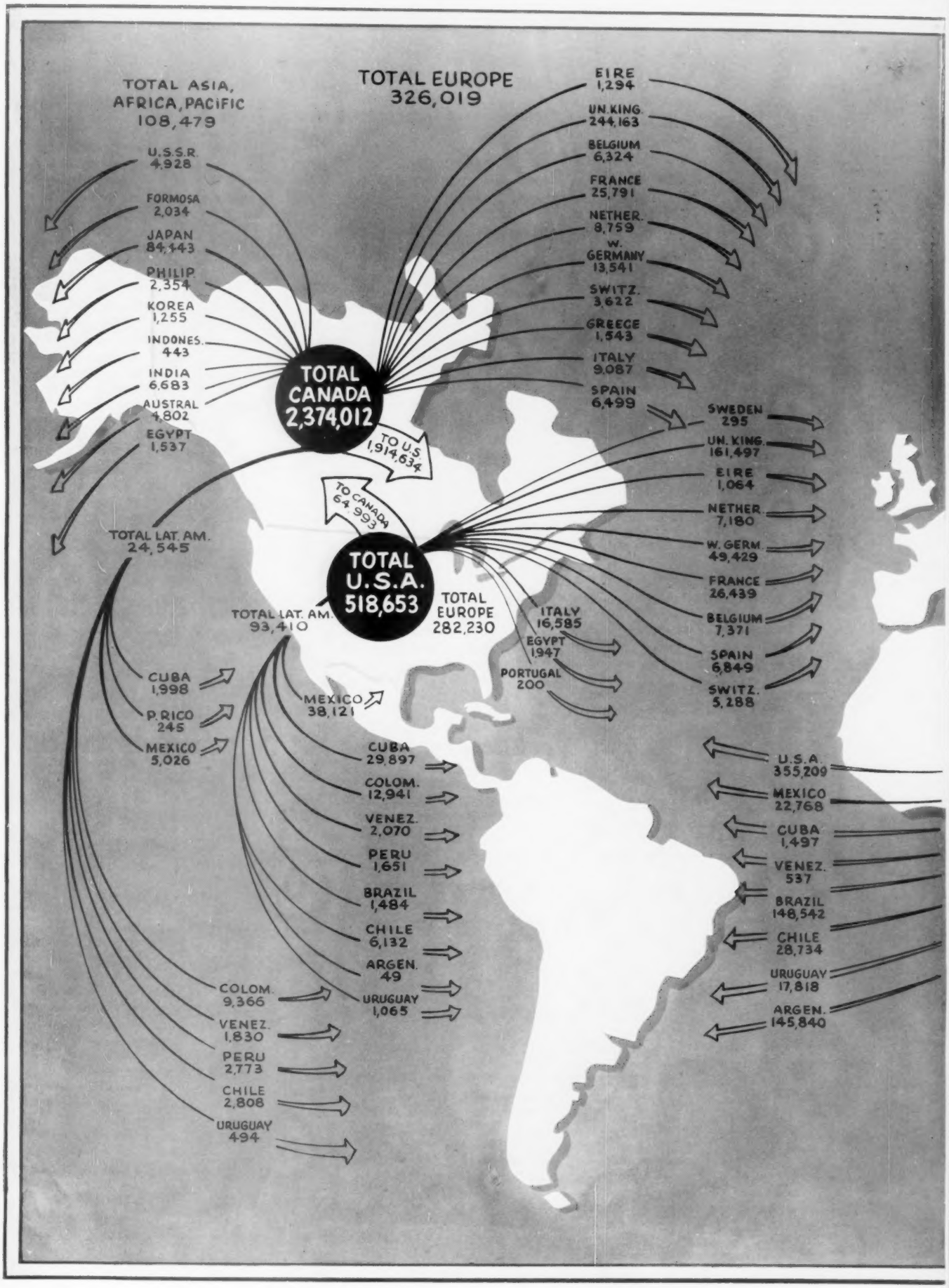
I further believe that pulp is the hub of the wheel of our industry whether it is pulp that is being produced and consumed in one integrated operation, or whether it is pulp that is being produced in one part of the world and consumed by another mill in another part of the world.

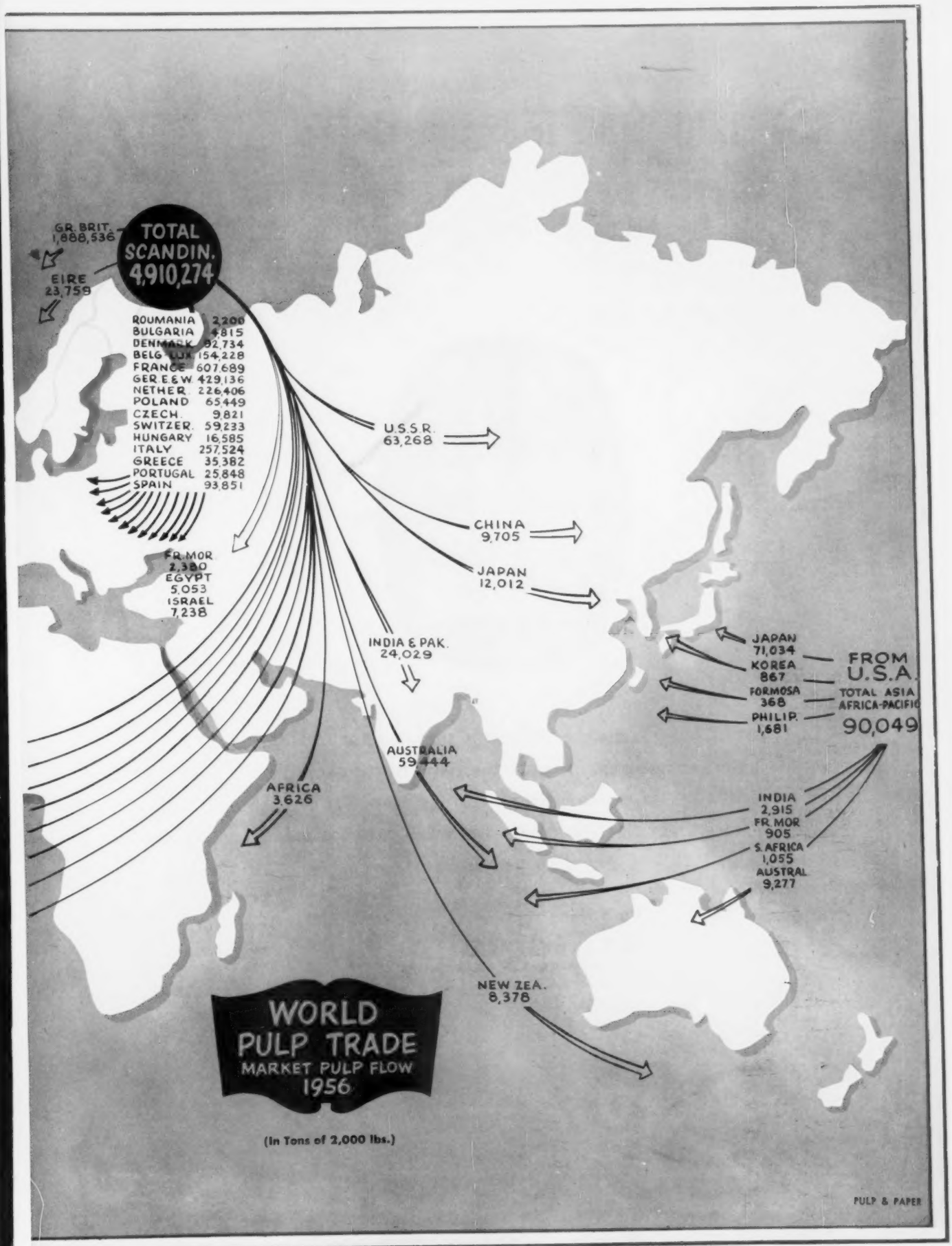
When the pulp markets are healthy, our industry is healthy; when the pulp markets are sick, our industry is likely to be a sick one. The data which associations have made available to us would indicate that we can expect a period of overcapacity.

I am not nearly as much frightened about this as I might be because I think that the very fact that we can recognize the threat is excellent insurance that it will not materialize. Intelligent people just don't walk blindly into danger. When danger threatens, they usually stop, and look, and listen. Those who manage our industry are intelligent, and so I'm optimistic.

Furthermore, I happen to believe that overcapacity in moderate amount may be healthy. When I say this, I'm mindful of an editorial which appeared in the New York **Times** one day last fall. It referred to comments made by a major economist. He pointed out that it is no longer price competition which counts. Today what really counts in the competitive industry is the new commodity, the new product, the new type of organization. During the period of relative shortage of woodpulp, we did not have many opportunities to develop new products. We did not have much incentive to develop any new types of organizations. A modest surplus of capacity will give us the opportunity to develop new products and expand our markets.

We have a wonderful opportunity to capitalize on ever-receding horizons.


TOTAL ASIA, AFRICA, PACIFIC 108,479
TOTAL EUROPE 326,019
U.S.S.R. 4,928
FORMOSA 2,034
JAPAN 84,143
PHILIP. 2,354
KOREA 1,255
INDONES. 443
INDIA 6,683
AUSTRAL 4,802
EGYPT 1,537
TOTAL LAT. AM. 24,545
EIRE 1,294
UN. KING. 244,163
BELGIUM 6,324
FRANCE 25,791
NETHER. 8,759
W. GERMANY 13,541
SWITZ. 3,622
GREECE 1,543
ITALY 9,087
SPAIN 6,499
TOTAL CANADA 2,374,012
TO U.S. 1,914,634
TO CANADA 64,993
TOTAL U.S.A. 518,653
TOTAL LAT. AM. 93,410
TOTAL EUROPE 282,230
SWEDEN 295
UN. KING. 161,497
EIRE 1,064
NETHER. 7,180
W. GERM. 49,429
FRANCE 26,439
BELGIUM 7,371
SPAIN 6,849
SWITZ. 5,288
ITALY 16,585
EGYPT 1,947
PORTUGAL 200
CUBA 1,998
P. RICO 245
MEXICO 5,026
MEXICO 38,121
CUBA 29,897
COLOM. 12,941
VENEZ. 2,070
PERU 1,651
BRAZIL 1,484
CHILE 6,132
ARGEN. 49
URUGUAY 1,065
COLOM. 9,366
VENEZ. 1,830
PERU 2,773
CHILE 2,808
URUGUAY 494
U.S.A. 355,209
MEXICO 22,768
CUBA 1,497
VENEZ. 537
BRAZIL 148,542
CHILE 28,734
URUGUAY 17,818
ARGEN. 145,840


GR. BRIT. 1,888,536
EIRE 23,759
TOTAL SCANDIN. 4,910,274
ROUMANIA 2,200
BULGARIA 4,815
DENMARK 82,734
BELG. LUX 154,228
FRANCE 607,689
GER. E & W 429,136
NETHER. 226,406
POLAND 65,449
CZECH. 9,821
SWITZER. 59,233
HUNGARY 16,585
ITALY 257,524
GREECE 35,382
PORTUGAL 25,848
SPAIN 93,851
U.S.S.R. 63,268
CHINA 9,705
JAPAN 12,012
FR. MOR 2,380
EGYPT 5,053
ISRAEL 7,238
INDIA & PAK. 24,029
AUSTRALIA 59,444
AFRICA 3,626
NEW ZEA. 8,378
JAPAN 71,034
KOREA 867
FORMOSA 368
PHILIP. 1,681
FROM U.S.A. TOTAL ASIA AFRICA-PACIFIC 90,049
INDIA 2,915
FR. MOR 905
S. AFRICA 1,055
AUSTRAL 9,277
WORLD PULP TRADE
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1956
(In Tons of 2,000 lbs.)
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PULP & PAPER

WORLD MARKET PULP DIRECTORY

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Worldwide Directory by Grades

Information on addresses, trade names, brokers, etc., may be found in the listings by companies which immediately follows this section.

Dissolving and Special

United States
Brown Company
Buckeye Cellulose Corp.
International Paper Co.
Ketchikan Pulp Co.
Rayonier, Inc.
Scott Paper Co., West Coast Division
Weyerhaeuser Timber Co.
Canada
Alaska Pine & Cellulose, Ltd.
Alliance Paper Mills, Ltd.
Canadian International Paper Co.
Columbia Cellulose Co. Ltd.
Ontario Paper Co., Ltd.
Restigouche Co. Ltd.
Austria
Kellner-Partington Paper Pulp Co. Ltd.
Finland
Enqvist, J. W. O/Y
Kajaani O/Y
O/Y Kaukas A/B
Rauma Repola O/Y
Rosenlew, W. and Co., A/B
Norway
Borregaard, Aktieselskapet
Sweden
Bentsfors Sulfitaktiebolag
Billeruds Aktiebolag
Edsvalla Bruk, A/B
Forshaga Sulfit A/B
Hylte Bruks A/B
Iggesunds Bruk, A/B
Korsnas Aktiebolag
Mo & Domsjo, Aktiebolag
Stroms Bruks Aktiebolag
Svartviks Aktiebolag
Uddeholms Aktiebolag
Utansjo Cellulosa A/B
Wifstavarfs A/B

Paper Grades

SULFITE, BLEACHED

United States
Crown Zellerbach Corp.
Eastern Corporation
Ketchikan Pulp Co.
Penobscot Chemical Fibre Co.
Puget Sound Pulp & Timber Co.
Rayonier Inc.
St. Regis Paper Co.
Scott Paper Co., Hollingsworth & Whitney Div. West Coast Div.
Weyerhaeuser Timber Co.
Canada
Abitibi Power & Paper Co., Ltd.
Alaska Pine & Cellulose, Ltd.
Alliance Paper Mills, Ltd.
Canadian International Paper Co.
Columbia Cellulose Co. Ltd.
Gaspesia Sulphite Co., Ltd.
Howard Smith Paper Mills Ltd.
Irving Pulp & Paper Ltd.
North Western Pulp & Power, Ltd.
Restigouche Co. Ltd.
Austria
Kellner-Partington Paper Pulp Co. Ltd.
Finland
Aanekoski O/Y
Enqvist, J. W. O/Y
Haarlan Selluloosayhtio
O/Y Kaukas A/B
Kymmene, A/B
Rauma-Repola O/Y
Rosenlew, W. and Co., A/B
Serlachius, G. A., O/Y
Yhtyneet Paperitehtaat O/Y
Germany
Zellstofffabrik Waldhof
Norway
Borregaard, A/S
Greaker Cellulosefabrik A/S
Krogstad Cellulosefabrik A/S
Mjondalen Cellulosefabrik A/S
Tofte Cellulosefabrik A/S
Toten Cellulosefabrik A/S
Vestfos Cellulosefabrik A/S
Sweden
Bengtsfors Sulfitaktiebolag
Billeruds A/B
Edsvalla Bruk A/B
Essvik
Forshaga Sulfit A/B
Hissmofors A/B
Iggesunds Bruk A/B
Korsnas A/B
Mo & Domsjo, A/B
Munkedals A/B
Skonvik
Stroms Bruks A/B
Svartvik
Svenska Cellulosa, A/B
Tegefors Verk A/B
Uddeholms A/B
Wikmanshytte Bruks A/B
Yugoslavia
Fabrika Celuloza Prijedor

SULFITE, UNBLEACHED

United States
Crown Zellerbach Corp.
Spaulding Pulp and Paper Co.
Canada
Abitibi Power & Paper Co., Ltd.
Anglo-Canadian Pulp and Paper Mills, Ltd.
Anglo-Newfoundland Development Co., Ltd.
Bathurst Power & Paper Co., Ltd.
Bowater's Newfoundland Pulp & Paper Mills, Ltd.
Canadian International Paper Co.
Donnacona Paper Co., Ltd.
Gaspesia Sulphite Co., Ltd.
Great Lakes Paper Co., Ltd.
James Maclaren Co., Ltd.
Mersey Paper Co., Ltd.
Ontario Paper Co., Ltd.
Powell River Co., Ltd.
Quebec North Shore Paper Co.
St. Lawrence Corp., Ltd.
St. Raymond Paper, Ltd.
Finland
Ahlstrom, A. O/Y
Eklof, Aug., A/B
Enso-Gutzeit O/Y
Jakobstads Cellulosa A/B
Kajaani O/Y
Kemi, O/Y
Kymmene, A/B
Nokia O/Y
Serlachius, G. A., O/Y
Toppila, O/Y
Veitsiluoto O/Y
Yhtyneet Paperitehtaat O/Y
Norway
Katfos Fabriker, A/S
Sweden
Bergvik och Ala A/B
Gota Sulfitaktiebolaget
Hellefors Bruks A/B
Hylte Bruks A/B
Kramfors
Mackmyra Sulfit A/B
Marma Langrors A/B
Oskarstrom Sulphite Mills A/B
Stjernfors-Stalldalen A/B
Stora Kopparbergs Bergslags A/B
Storviks Sulfit A/B
Sund
Svano A/B
Svenska Cellulosa, A/B
Uddeholms A/B
Utansjo Cellulosa A/B
Wifstavarfs A/B
Yugoslavia
Fabrik Celuloza Prijedor

SULFATE, BLEACHED

United States
Bowaters Southern Paper Corp.
Brunswick Pulp & Paper Co.
Buckeye Cellulose Corp.
Champion Paper & Fibre Co.
Coosa River Newsprint Co.
Crown Zellerbach Corp.
East Texas Pulp and Paper Co.
Gulf States Paper Corp.
Halifax Paper Co., Inc.
International Paper Co.
North Carolina Pulp Co.
Oxford Paper Co.
Potlatch Forests, Inc.
Rayonier Inc.
Riegel Carolina Corp., Carolina Div.
St. Marys Kraft Corp.
St. Regis Paper Co.
Scott Paper Co., Hollingsworth & Whitney Div.
West Virginia Pulp and Paper Co.
Weyerhaeuser Timber Co.
Canada
British Columbia Forest Products, Ltd.
Canadian International Paper Co.
Dryden Paper Co., Ltd.
The KVP Co., Ltd.
MacMillan & Bloedel, Ltd.
Marathon Paper Mills of Canada, Ltd.
North Western Pulp & Power, Ltd.
Finland
Enso-Gutzeit O/Y
Norway
Hurum Fabriker, A/S
Sweden
Forss A/B
Iggesunds Bruk, A/B
Kopparfors A/B
Korsnas A/B
Mo & Domsjo, A/B
Munksjo A/B
Ostrand
Statens Skogsindustrier A/B

Stora Kopparbergs Bergslags A/B
Svenska Cellulosa A/B
Uddeholms A/B

SULFATE, SEMI-BLEACHED

United States
Champion Paper & Fibre Co.
Halifax Paper Co., Inc.
Scott Paper Co., Hollingsworth & Whitney Div.
Canada
Canadian Forest Products Ltd.
Dryden Paper Co., Ltd.
MacMillan & Bloedel Ltd.
Finland
Oulu O/Y
Sunila O/Y
Sweden
Korsnas Aktiebolag

SULFATE, UNBLEACHED

United States
Chesapeake Corp. of Virginia
Container Corp. of America
Crown Zellerbach Corp.
Halifax Paper Co., Inc.
International Paper Co.
National Container Corp.
North Carolina Pulp Co.
Oxford Paper Co.
St. Marys Kraft Corp.
St. Regis Paper Co.
Southland Paper Mills, Inc.
West Virginia Pulp and Paper Co.
Canada
Canada Paper Co.
Canadian Forest Products Ltd.
Canadian International Paper Co.
Consolidated Paper Corp., Ltd.
Dryden Paper Co., Ltd.
Fraser Companies, Ltd.
The KVP Co., Ltd.
MacMillan & Bloedel Ltd.
North Western Pulp & Power, Ltd.
St. Lawrence Corp., Ltd.
Finland
Enso-Gutzeit O/Y
Joutseno-Pulp O/Y
Kemi, O/Y
Lohja-Kotka, O/Y
Oulu O/Y
Sunila O/Y
Norway
Hurum Fabriker, A/S
Sweden
Bergvik och Ala A/B
Dynas A/B
Eds Cellulosafabriks A/B
Forss A/B
Iggesunds Bruk, A/B
Marma Langrors A/B
Mo & Domsjo, A/B
Munksund
Nensjo
Obbola
Ostrand
Sandvikens Cellulosa A/B
Statens Skogindustrier, A/B
Svenska Cellulosa A/B
Wifstavarfs A/B

SODA, BLEACHED

United States
The Mead Corp.
New York and Pennsylvania Co.
Penobscot Chemical Fibre Co.
Canada
Howard Smith Paper Mills Ltd.

SEMI-CHEMICAL

Canada
Richmond Pulp & Paper Co. of Canada, Ltd.
Finland
Veitsiluoto O/Y

GROUNDWOOD

United States
American Wood Board Co.
Arizona Pulp & Paper Co.
Sealright-Oswego Falls Corp.
Tomahawk Pulp Co.
Canada
Bathurst Power & Paper Co., Ltd.
John Breakey, Ltd.
Donohue Brothers Ltd.
Gair Co., Canada Ltd.
Gulf Pulp & Paper Co.
Halifax Power & Pulp Co., Ltd.
Howard Smith Paper Mills Ltd.
Lafayette Pulp & Paper Co.
Lake Megantic Pulp Co.
Lotbiniere Pulp & Paper Co., Ltd.
James Maclaren Co., Ltd.
Minas Basin Pulp & Power Co., Ltd.
Mohawk Corp., Ltd.
Provincial Paper Ltd.
Quebec North Shore Paper Co.
Richmond Pulp & Paper Co. of Canada, Ltd.
St. George Pulp & Paper Co., Ltd.
St. Lawrence Corp., Ltd.
St. Raymond Paper, Ltd.
Soucy, Inc., F. F.
Thorold Pulp Co., Ltd.
Finland
Stockfors, A/B
Svarta Bruk, O/Y, A/B
Norway
Viul Tresliperi, A/S
Sweden
Bure A/B
Byske
Edsvalla Bruk, A/B
Forshaga Sulfit A/B
Forsse Woodpulp Mill
Hogfors Trasliperi, A/B
Iggesunds Bruk, A/B
Lulea
Marma Langrors A/B
Rottneros Bruk, A/B
Scharins-Soner A/B
Svenska Cellulosa A/B
Ulvvik

ESPARTO, BLEACHED

France
L'Alfa S. A.

STRAW, BLEACHED

The Netherlands
Coop. Stroocartonfabriek "DE EENDRACHT"
N. V. Stroostoffabriek "PHOENIX"
N. V. Maatschappij tot Stroveredeling "SOVE"

SCREENINGS

United States
Brown Company
Canada
Abitibi Power & Paper Co., Ltd.
Canadian International Paper Co.
Gaspesia Sulphite Co., Ltd.
Great Lakes Paper Co., Ltd.
Gulf Pulp & Paper Co.
Provincial Paper Ltd.
St. Raymond Paper, Ltd.
Finland
Kajaani O/Y
Sweden
Svenska Cellulosa A/B

For Quality Northern Pulps

demand

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DRYDEN Unbleached Sulphate Pulp

GASPESIA Bleached Sulphite Pulp

ANGLO-CANADIAN Unbleached Sulphite Pulp

ANGLO-NEWFOUNDLAND Unbleached Sulphite Pulp

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in U.S.A.

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400 Madison Avenue
New York 17, N. Y.

20 North Wacker Drive
Chicago 6, Illinois

in Canada and Overseas

ANGLO PAPER PRODUCTS, LTD.
2055 Peel Street
Montreal 2, Quebec

67 Yonge Street
Toronto 1, Ontario

Flame Thrower!
WEYERHAEUSER
PULP
DIVISION

World Producers of Market Pulp

Compiled especially by PULP & PAPER magazine. Listings following company names and addresses give type of pulp and brand names. All grades are softwood unless otherwise specified.

UNITED STATES

American Wood Board Co.
Schuylerville, N.Y.
Groundwood
Standard, unbleached

Arizona Pulp & Paper Co.
Flagstaff, Ariz.
Agents: **Gottesman & Co., Inc.**
Central Natl. Corp. (for export)
Dry unbleached groundwood

Bowaters Southern Paper Corp.
Mill at: Calhoun, Tenn.
Sales: **The Bowater Paper Co. Ltd.**
250 Park Ave., New York 17, N.Y.
Sulfate, bleached

Brown Co.
General Sales Office:
150 Causeway St., Boston 14, Mass.
Branch Offices:
500 Fifth Ave., New York 36, N.Y.
Prudential Plaza, Chicago 1, Ill.
681 Market St., San Francisco, Calif.
Montreal (Brown Forest Products Ltd.) Castle Bldg., 1410 Stanley St.
Mill at: Berlin, N.H.
High Alpha, dissolving & paper grade fibers
(Softwood and hardwood)
(Sulfite base)
Screenings
Sulfite—Sulfate
Brands:
Solka: Solka Soft P.P.Q.; Solka Soft Alpha; Solka Dur Sylvan; Solka Dur Natus; Solka Special Dur Albas; Solka Floc

Brunswick Pulp & Paper Co.
Mill at: Brunswick, Ga.
Agent: **Mead Pulp Sales, Inc.**
Sulfate, bleached
Grade—Pine hardwood
Brand: Brunswick

Buckeye Cellulose Corp.
Foley, Fla.
Agent: **Bulkley, Dunton Pulp Co., Inc.**
(bleached sulfate only)
Dissolving
Sulfate, bleached

Champion Paper & Fibre Co.
Executive Office: Hamilton, O.
Mills at:
Canton, N.C.
Pasadena, Texas
Agent: **Castle & Overton, Inc.**
Sulfate, bleached
Semi-bleached
Bleached-hardwood
Brands: Dixie Prime Bleached Sulfate; Lone Star Prime Semi-Bleached Sulfate; Prime Bleached Hardwood Sulfate

Chesapeake Corp. of Virginia
West Point, Va.
Agents: **Castle & Overton, Inc.**
Cellulose Sales Co., Inc.

The Parsons & Whittemore/Lyddon Organization
Woodpulp, Inc.
(Prime Quality Kraft)
Sulfate, unbleached
Standard grades
Brands: Chesapeake Prime Unbleached Kraft and Chesapeake Prime Unbleached Kraft (soft cook)

Coosa River Newsprint Co.
Coosa Pines, Ala.
Agent: **Bulkley, Dunton Pulp Co., Inc.**
Sulfate, bleached

Container Corp. of America
Main Office:
38 S. Dearborn St., Chicago 3, Ill.
Mill at: Fernandina, Fla.
Agents: **Gottesman & Co., Inc.**
Central Natl. Corp. (for export)
Sulfate, unbleached
Special grades
Brand: Conus

Crown Zellerbach Corp.
Executive office:
343 Sansome St., San Francisco 19, Calif.
Mills at: Camas, Wash.
Port Townsend, Wash.
Sulfite, bleached, unbleached
Sulfate, bleached, unbleached

East Texas Pulp and Paper Co.
Evadale, Texas
Sulfate, bleached
Softwood and Hardwood
Brand: Eastex

Eastern Corp.
Executive office:
Bangor, Me.
Mills at:
Lincoln, Maine
South Brewer, Maine
Agents: **Gottesman & Co., Inc.**
Central Natl. Corp. (for export)
Sulfite, bleached
Special grades
Standard grades
Standard grades—hardwood
Brand: Purocell

Gulf States Paper Corp.
E-Z Pulp Sales Division
Tuscaloosa, Ala.
Branch Office: 230 Park Ave., New York 17, N.Y.
Mill at: Demopolis, Ala.
Export Agents: **Cellulose Sales Co., Inc.**
Sulfate, bleached
Softwood and hardwood
Brand: E-Z

Halifax Paper Co. (subsidiary of Albemarle Paper Mfg. Co.)
Roanoke Rapids, N. C.
Sulfate, bleached
Partially bleached
Sulfate, unbleached
Standard grades
Brand: Albemarle

Hollingsworth & Whitney Div., Scott Paper Co.
Front and Market Sts., Chester, Pa.
Mills at:
Madison, Me. (Groundwood)
Mobile, Ala. (Sulfate)
Sulfate
Semi-bleached
Bleached

International Paper Co.
Executive Office:
220 E. 42nd St., New York 17, N.Y.
Mills at:
Natchez, Miss.
Springhill, La.
Agents: **Gottesman & Co., Inc.**
Sulfate, bleached and unbleached paper grades
Riordon Sales Corp., Ltd.
Bleached sulfate dissolving grades
Brands: Novocell; Tenacell; Supercell

Ketchikan Pulp Co.
Ketchikan, Ward Cove, Alaska
Agent: **Bulkley, Dunton Pulp Co., Inc.**
Sulfite
Bleached
Dissolving

The Mead Corp.
Mill at:
Kingsport, Tenn.
Agent: **Mead Pulp Sales, Inc.**
Soda
Bleached
Brand: Mead

New York & Pennsylvania Co.
425 Park Ave., New York 22, N. Y.
Mill at: Willsboro, N. Y.
Soda, bleached

North Carolina Pulp Co.
Mill at: Plymouth, N. C.
Branch office:
Box 710, Camden 1, N. J.
Sulfate, bleached
Standard grades
Sulfate, unbleached
Board grades

Owens-Illinois Mill Div.
(formerly National Container Corp.)
Executive office: 405 Lexington Ave., New York 17, N. Y.
Mills at: Big Island, Va.
Jacksonville, Fla.
Jaite, Ohio
Reading, Pa.
Tomahawk, Wis.
Valdosta, Ga.
Sulfate, unbleached
Standard grades

Oxford Paper Co.
Executive office:
230 Park Ave., New York 17, N.Y.
Mill at: Rumford, Maine
Agent: **Stora Kopparberg Corp.**
Sulfate, bleached and unbleached (hardwood)
Brand: Harbrite

In Belgium as well as in the U.S.A. . . .
papermakers use and like

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CHLORINE DIOXIDE BLEACHED SOFTWOOD SULPHATE

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Throughout the free world, papermakers use and like Riegel's Albacel and Astracel . . . paper-grade pulps that provide the right balance of all important qualities . . . brightness, cleanliness, strength, formability and proper beating characteristics.

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260 MADISON AVENUE, NEW YORK 16, N. Y.

Penobscot Chemical Fibre Co.
Executive office:
211 Congress St., Boston, Mass.
Mill at: Great Works, Me.
Sulfite, bleached
Standard grades
Soda
Bleached
Brand: Penobscot

Potlatch Forests, Inc.
Lewiston, Ida.
Agent: **Bulkley, Dunton Pulp Co., Inc.**
Sulfate, bleached

Puget Sound Pulp and Timber Co.
Bellingham, Wash.
Agent: **Bulkley, Dunton Pulp Co.**
Sulfite, bleached

Rayonier Inc.
Executive & Sales office: 161 E. 42nd St., New York 17, N. Y.
Mills at:
Fernandina Beach, Fla.
Hoquiam, Wash.
Jesup, Ga.
Port Angeles, Wash.
Shelton, Wash.
Chemical celullose
Sulfite, bleached standard paper grades
Sulfate, bleached standard paper grades
Softwood and hardwood
Brands:
Cellunier, Cordenier, Hicolor, Nitration Cellulose, Purayonier Rayaceta, Rayamo, Raybrite Rayocord, Rayocord-X, Special Acetate Cellulose, Tokusufu. Georgianier, Raybond, Rayphoto Kayweb, Snowhite.

Riegel Paper Corp.—Carolina Div.
Executive office: 260 Madison Ave., New York N.Y.
Mill at: Acme, N. C.
Agents: **Bulkley, Dunton Pulp Co. Bulkley, Dunton Ltd. Central National Corp. Gottesman & Co., Inc. Johnsen, Jorgensen & Wettre, Ltd.**
Bleached softwood and hardwood kraft
Brands: Albacel and Astracel

St. Marys Kraft Corp.
St. Marys, Ga.
Agents: **Gilman Paper Co.**
Sulfate
Bleached
Unbleached
Bleached, high brightness grades

St. Regis Paper Co.
Executive office:
150 E. 42nd St., New York 17, N.Y.
Mill at: Tacoma, Wash.
Agent: **St. Regis Paper Co.**
Sulfate, bleached and unbleached Superstandard grades
Brand: Tacoma

Scott Paper Co.
West Coast Division
Everett, Wash.
Manager of Pulp Sales
R. M. Heath
Scott Paper Co.
Chester, Pa.
Sulfite, bleached
(Dissolving and related grades)
Standard grades
Brand: Soundview

Sea'right-Oswego Falls Corp.
Fulton, N. Y.
Groundwood
Standard unbleached, bleached

Southland Paper Mills, Inc.
Lufkin, Texas
Agent: **Perkins-Goodwin Co.**
Sulfate, unbleached
Standard grades

Spaulding Pulp and Paper Co.
Newberg, Ore.
Agent: **Perkins-Goodwin Co.**
Sulfite, unbleached
Standard grades

Tomahawk Pulp Co.
Tomahawk, Wis.
Branch office:
115 S. Superior St., Appleton, Wis.
Groundwood
Fine tissue grades
Toweling, and free board
Grades to specifications

West Virginia Pulp and Paper Co.
Executive office:
230 Park Ave., New York 17, N.Y.
Mills at: Mechanicville, N. Y.
Tyrone, Pa.
Williamsburg, Pa.
Luke, Md.
Covington, Va.
Charleston, S. C.
Sulfate
Bleached
Unbleached

Weyerhaeuser Timber Co., Pulp Div.
Sales office:
230 Park Ave., New York 17, N.Y.
Branches:
Bank Bldg., Clinton, Mass.
400 W. Madison St., Chicago 6, Ill.
681 Market St., San Francisco, Calif.
Mills at:
Cosmopolis, Wash.
Everett, Wash.
Longview, Wash.
Sulfite, bleached
Dissolving and related grades
Papermaking grades
Sulfate, bleached
Papermaking grades

CANADA

Abitibi Power & Paper Co., Ltd.
408 University Ave., Toronto 2, Ont.
Mills at: Sault Ste. Marie, Ont.
Smooth Rock Falls, Ont.
Agent: **Mead Pulp Sales, Inc.**
Sulfite, bleached
Sulfite, unbleached
Screenings
Sulfite
Side Run News
Brand: Abitibi

Alaska Pine & Cellulose, Ltd.
(Subsidiary of Rayonier Inc.)
1111 W. Georgia St., Vancouver 5, B. C.
Mills at: Port Alice, B.C.
Woodfibre, B.C.
Sulfite, bleached
Paper and dissolving grades
Brand: Alaska Pine & Cellulose

Alliance Paper Mills, Ltd.
Merritton, Ont.
Sulfite, bleached
Special grades
Glassine
Tissue
Brand: Alliance

...from our pulp mill in Willsboro, N. Y. we are pleased to offer a stable and continuing **SOURCE OF**

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New York and Penn
Pulp and Paper Manufacturers

headquarters and sales: **New York & Pennsylvania Co., Inc.**
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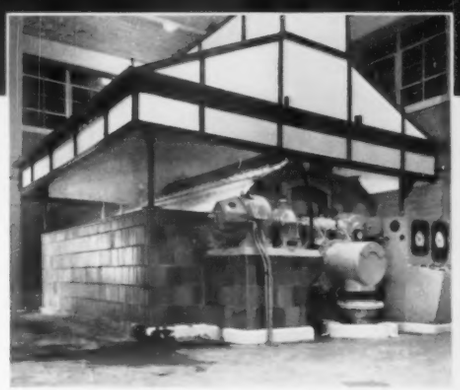
At Eastex, the high brightness of pulp, board and paper is not the result of happenstance. There are reasons . . . *five* of them . . . that produce a bright, clean, strong stock. They are the five steps in the important bleaching operation*.

Chlorine Dioxide, the 5th bleaching stage, is responsible for that "plus" brightness . . . the super-whiteness so much in demand.

Brightness, cleanliness and *strength* are under constant control at this modern mill. Another reason why the name Eastex is highly regarded by those who demand a quality product.



The Chlorine Dioxide Bleach Washer features a top shower of SO_2 for color stabilization . . . still another step toward greater uniformity.

***bleaching stages: chlorination, caustic, hypochlorite twice, and chlorine dioxide.**

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General Sales Office
P. O. Box 816,
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Telephone—EVergreen 5-3711

Eastern Sales Office
122 East 42nd St.,
New York City, N. Y.
Telephone—OXford 7-2980

Midwest Sales Office
1003 Builders Bldg.,
Chicago, Ill.
Telephone—RAndolph 6-1068

Western Sales Offices
1151 South Broadway,
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Telephone—RIchmond 7-6126

210 California Street,
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Telephone—SUtter 1-612

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Anglo-Canadian Pulp and Paper Mills, Ltd.
10-14 Blvd. des Capucins, Quebec
Agents: **Anglo Paper Products, Ltd.**
Northeastern Paper Sales, Inc.
Sulfite, unbleached
Strong
Brand: Anglocan

Anglo-Newfoundland Development Co. Ltd.
Grand Falls, Newfoundland
Agents: **Anglo Paper Products, Ltd.**
Northeastern Paper Sales, Inc.
Sulfite, unbleached
Strong
Brand: A.N.D.

Bathurst Power & Paper Co., Ltd.
Head Office: Bathurst, N. B.
Exec. Offices: 760 Sun Life Bldg., Montreal 2, Que.
Mill at: Bathurst, N.B.
Agents: **Acer McLernon, Inc. (Montreal)**
Strong unbleached sulfite; Groundwood
Brand: Bathurst

Bowater's Newfoundland Pulp & Paper Mills, Ltd.
Corner Brook, Newfoundland
Agent: **The Bowater Paper Co., Ltd.**
Sulfite, unbleached
Standard grades
News

John Breakey, Ltd.
Breakeyville, Que.
Agents: **Pulp & Paper Trading Co. Woodpulp, Inc.**
Groundwood

British Columbia Forest Products, Ltd.
Crofton, B.C.
Agent: **Mead Pulp Sales, Inc.**
Sulfate, bleached
Brand: Crofton Kraft

Canada Paper Co.
407 McGill St., Montreal 1, Que.
Mill at: Windsor Mills, Que.
Agent: **Howard Smith Paper Mills, Ltd.** (Pulp Sales Dept.)
Sulfate, unbleached
Special Condenser
Brand: Windsor

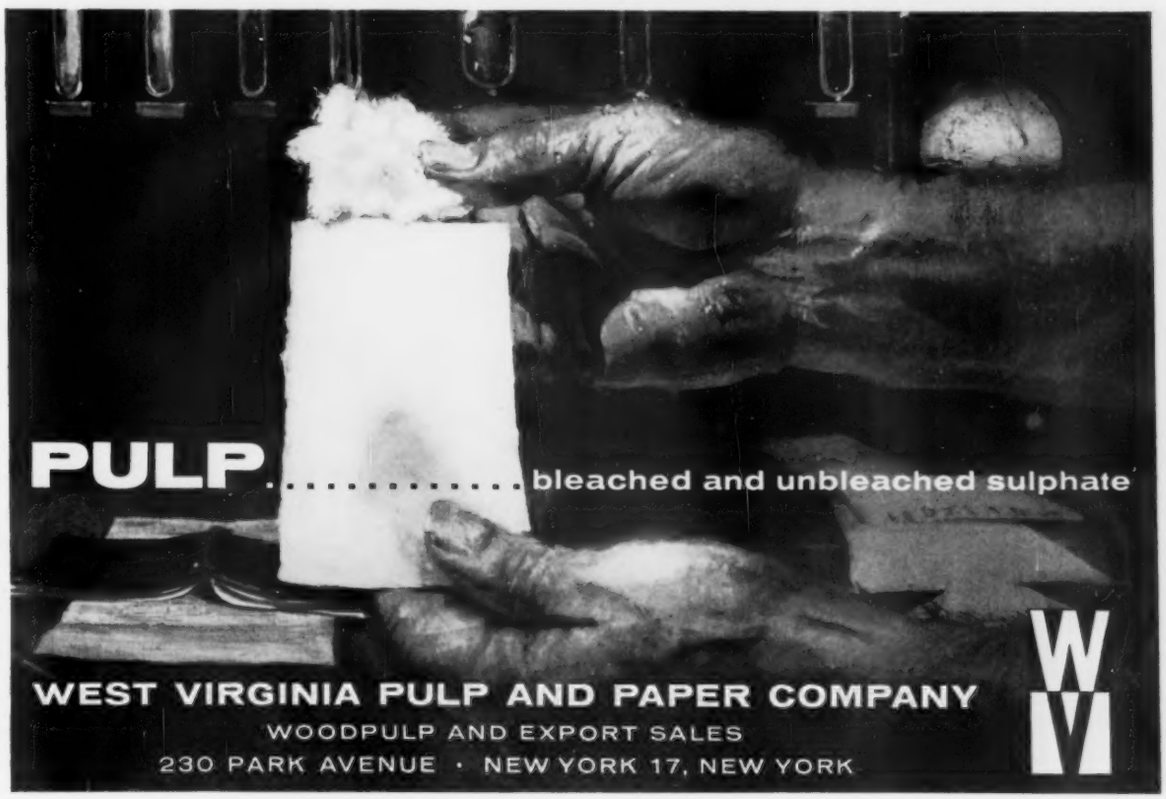
Canadian Forest Products Ltd.
Howe Sound Pulp Division
Executive Office: 999 W. Pender St., Vancouver 1, B.C.
Mill at: Port Mellon, B.C.
Agent: **Perkins-Goodwin Co.**
Sulfate
Semi-bleached, unbleached

Canadian International Paper Co.
Sun Life Bldg., Montreal 2, Que.
Mills at: Calumet, Que.
Hawkesbury, Ont.
Gatineau, Que.
LaTuque, Que.
Temiskaming, Que.
Trois Rivieres, Que.
Sold by: **Riordon Sales Corp., Ltd.**
Sulfite, bleached
Dissolving and paper grades
Sulfite, unbleached
Paper grade
Screenings
Sulfite
Sulfate
High Alpha, bleached and unbleached, for specialty papers
Brands: Novocell; Tenacell; Filmcell; Acetacell; Photocell; Plasticell

Columbia Cellulose Co. Ltd.
2035 Guy Street, Montreal 25, Que.
Mill at Prince Rupert, B. C.
Sulfite, bleached
Paper and dissolving grades

Consolidated Paper Corp., Ltd.
Sales office:
Consolidated Paper Sales, Ltd.
Sun Life Bldg., Montreal, Que.
Mills at:
Port Alfred, Que.
Grand Mere, Que.
Cap de la Madeleine, Que.
Shawinigan Falls, Que.
Three Rivers, Que.

Donnacona Paper Co., Ltd.
407 McGill Street, Montreal, Que.
Mill at Donnacona, Que.
Agent: **Howard Smith Paper Mills Ltd.**, Pulp Sales Dept.
Sulfite
Standard unbleached
Brand: Donnacona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WEST VIRGINIA PULP AND PAPER COMPANY
WOODPULP AND EXPORT SALES
230 PARK AVENUE · NEW YORK 17, NEW YORK
W

Donohue Brothers Ltd.
Clermont, Que.
Groundwood
Standard unbleached
Brand: Murray Bay
(All sold under long term contracts)

Dryden Paper Co., Ltd.
Dryden, Ont.
Agents: **Anglo Paper Products, Ltd.**
Northeastern Paper Sales, Inc.
Sulfate, bleached and unbleached.
Brand: Dryden

Fraser Companies, Ltd.
Sales office:
1010 St. Catherine St. W.
Montreal 2, Que.
Mills at: Edmundston, N. B.
Newcastle, N. B.
General offices: Edmundston, N. B.
Sulfate, unbleached
Standard grades

Gair Co., Canada, Ltd.
111 Richmond St. West, Toronto 1, Ont.
Mills at:
Campbellford, Ont.
Frankford, Ontario
Groundwood
Standard unbleached
Brand: Gair

Gaspesia Sulphite Co., Ltd.
Chandler, Que.
Agents: **Anglo Paper Products, Ltd.**, **Northeastern Paper Sales, Inc.**
Sulfite, bleached
Standard
Sulfite, unbleached
Glassine
Brand: Gaspesia

The Great Lakes Paper Co., Ltd.
P.O. Box 430, Fort William, Ont.
Customer Services:
Canadian Wood Pulp Corp.,
New York and Chicago
Sulfite, unbleached
Standard grades
Sulfite, unbleached glassine screenings
Brand: Great Lakes

Gulf Pulp & Paper Co.
65 St. Anne St., Quebec, Que.
Mill at: Clarke City, Que.
Agent: **Price & Pierce, Ltd.**
Groundwood—pressed wet
Special unbleached
Standard unbleached
Screenings
Brand: Gulf

Halifax Power & Pulp Co., Ltd.
Sheet Harbour, Nova Scotia
Agents: **Gottesman & Co., Inc.**
Central National Corp. (for export)
Groundwood
Standard unbleached

Howard Smith Paper Mills Ltd.
407 McGill St., Montreal 1, Que.
Mills at: Cornwall, Ont.
Crabtree Mills, Que.
Agent: **Howard Smith Paper Mills Ltd.** (Pulp Sales Dept.)
Sulfite, bleached
Standard grades
Soda
Bleached
Groundwood
Standard unbleached
Brands: Crabtree; Seagull; Stormont

Irving Pulp & Paper Ltd.
P.O. Box 280, Lancaster, N. B.
Agents: **Bulkley, Dunton Pulp Co.**
Sulfite, bleached
Prime grades
Brand: Saint John

The KVP Co., Ltd.
200 Bay St., Toronto, Ont.
Mill at: Espanola, Ont.
Sulfate, bleached and unbleached

Lake Megantic Pulp Co.
Lake Megantic, Quebec
Agent: **Woodpulp, Inc.**
Groundwood—unbleached (moist)
Board and tissue
Brand: Lake Megantic

Lotbiniere Pulp & Paper Co., Ltd.
Danville, Que.
Mill at: Nicolet Falls, Que.
Agents: **The Parsons & Whitemore/Lyddon Organization**
Groundwood—unbleached (moist)
Standard grades—tissue and board
Brand: Lotbiniere

James Maclaren Co., Ltd.
Buckingham, Que.
Agents: **Gottesman & Co., Inc.**
Central Nat'l. Corp. (for export)
Sulfite, unbleached
Standard grades
Groundwood

MacMillan & Bloedel Ltd.
1199 W. Pender St.,
Vancouver 1, B.C.
Mill at: Port Alberni, B.C.
Agents: **U.S.A.—Mead Pulp Sales, Inc.**
All other countries—**Price & Pierce, Ltd.**
Sulfate, unbleached
Brands: Bloedel and Bloedel "A"
Mill at: Harmac, B.C.
Agent:All countries **Price & Pierce, Ltd.**
Sulfate, bleached, semi-bleached
Brand: Harmac

Marathon Paper Mills of Canada, Ltd.
Sales office:
Marathon Corp., Rothschild, Wis.
Mills at: Marathon, Ont.
Naheola, Ala. (under construction)
Bleached sulfate
Bleached hardwood sulfate

Mersey Paper Co., Ltd.
Liverpool, N.S.
Agent: **The Bowater Paper Co. Ltd.**
Sulfite
Standard unbleached
Pulping—Side Run News
Brand: Mersey

Minas Basin Pulp & Power Co. Ltd.
Hantsport, N.S.
Agent: **Price & Pierce, Ltd.**
Groundwood
Special bleached
Standard unbleached
Brand: Minas Basin

Mohawk Corp., Ltd.
P.O. Box 155, Riviere du Loup, Que.
Mill at: Riviere du Loup
Agents: **Gottesman & Co. Inc.**
Central Natl. Corp. (for export)
Groundwood
Standard unbleached

North Western Pulp & Power, Ltd.
(Subsidiary of St. Regis Paper Co.)
Hinton, Alberta
Sole agents: **St. Regis Paper Co.**
Sulfate, bleached and unbleached
Superstandard Grades
Brand: Alberta Hi-Brite

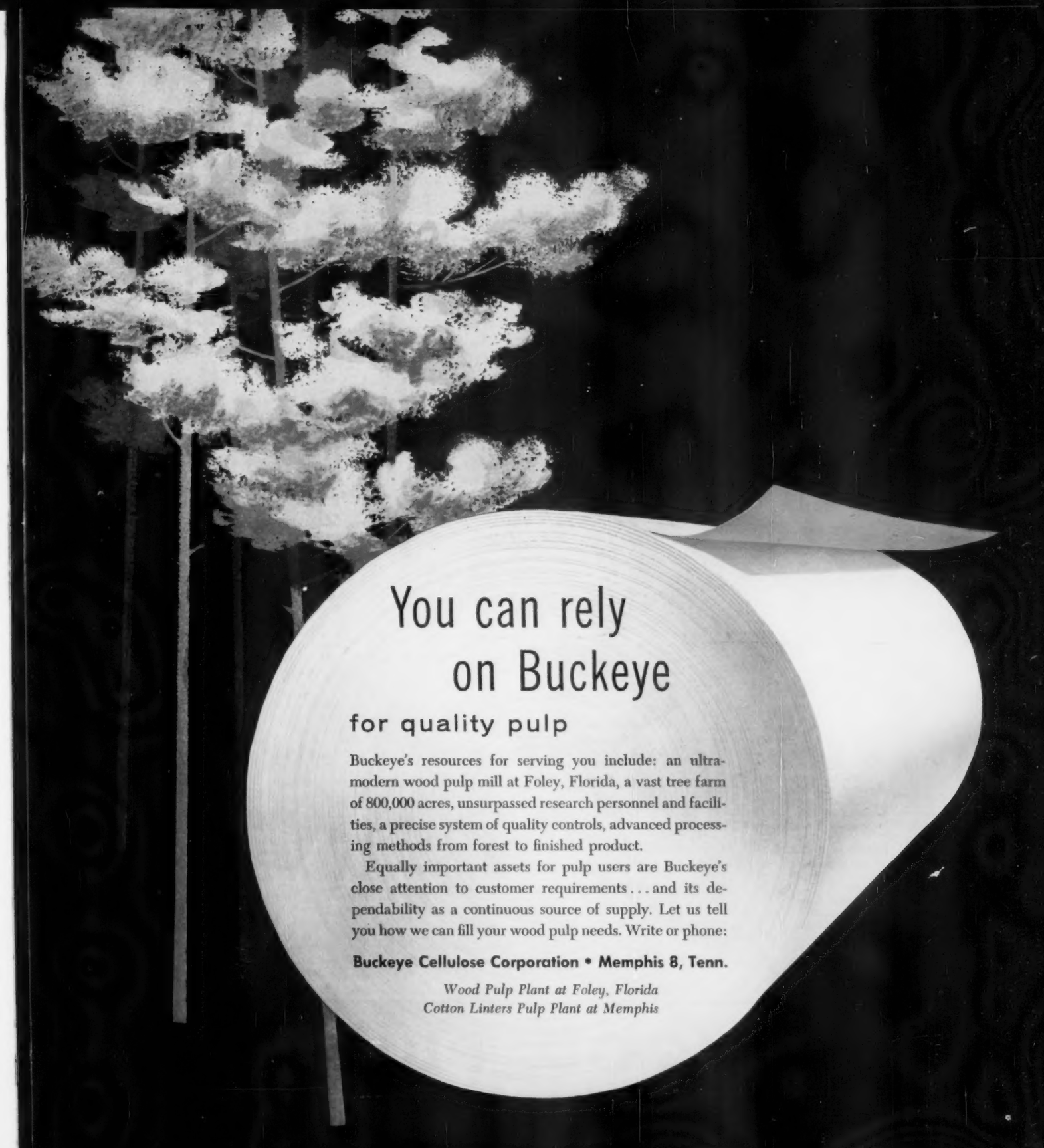
Ontario Paper Co., Ltd.
Thorold, Ontario
Agents: **Bulkley, Dunton Pulp Co., Inc.**
The Parsons & Whittemore/Lyddon Organization
Perkins-Goodwin Co.
Woodpulp, Inc.
Sulfite, unbleached
Special grades—glassine
Standard grades
Brand: Ontario

Powell River Co., Ltd.
Standard Bldg., Vancouver, B.C.
Sales office:
Powell River Sales Co., Ltd.
Standard Bank Bldg., Vancouver, B.C.
U. S. Sales office:
Powell River Sales Co., Ltd.
10 E. 40th St., New York, N.Y.
Mill at: Powell River, B.C.
Sulfite, unbleached
Standard grades
Brand: Powell River

Provincial Paper Ltd.
388 University Ave., Toronto, Ont.
Mill at: Port Arthur, Ontario
Agent: **Mead Pulp Sales Inc.**
Groundwood
Standard unbleached
Screenings
Sulfite
Brand: Provincial

Quebec North Shore Paper Co.
Head office:
680 Sherbrooke St. W., Montreal, Que.
Sales office:
Ontario Paper Co., Ltd., Thorold, Ontario
Mill at: Baie Comeau, Que.
Agents: **Bulkley, Dunton Pulp Co., Inc.**
The Parsons & Whittemore/Lyddon Organization
Perkins-Goodwin Co.
Sulfite, unbleached
Special grades
Standard grades
Groundwood
Standard unbleached

Restigouche Co. Ltd.
General Office: Edmundston, N.B.
Sales Office. 1010 St. Catherine St., West, Montreal 2, Que.
Mill at: Atholville, N.B.
Sulfite, bleached



You can rely on Buckeye

for quality pulp

Buckeye's resources for serving you include: an ultra-modern wood pulp mill at Foley, Florida, a vast tree farm of 800,000 acres, unsurpassed research personnel and facilities, a precise system of quality controls, advanced processing methods from forest to finished product.

Equally important assets for pulp users are Buckeye's close attention to customer requirements . . . and its dependability as a continuous source of supply. Let us tell you how we can fill your wood pulp needs. Write or phone:

Buckeye Cellulose Corporation • Memphis 8, Tenn.

Wood Pulp Plant at Foley, Florida
Cotton Linters Pulp Plant at Memphis

BUCKEYE PULP

Bleached and Semi-Bleached Kraft
from Southern Pine

Dissolving grades (for rayon cellophane and plastics)
Paper grades
Brands: Resticose; Restophane

Richmond Pulp & Paper Co. of Canada, Ltd. (Part of the Kruger Organization)
Bromptonville, Que.
Agent: **Kruger Paper Co., Inc.**
Semi-chemical
Groundwood
Standard unbleached
Brand: Richmond

St. George Pulp & Paper Co., Ltd.
Mill at: St. George, N. B.
P.O. Box 847, St. John, N. B.
Agents: **Bulkley, Dunton Pulp Co.**
Mead Pulp Sales, Inc.
Pulp & Paper Trading Co.
Woodpulp, Inc.
Groundwood
Bleached
Unbleached
Brand: Fibrewhite

St. Lawrence Corp., Ltd.
Sales office:
St. Lawrence Sales Co., Ltd.
Sun Life Bldg., Montreal, Que.
Mills at:
Dolbeau, Que.
East Angus, Que.
Nipigon, Ont.
Red Rock, Ont.
Three Rivers, Que.
Agents: **Gottesman & Co., Inc.**
Central Natl. Corp. (for export)
Sulfite, unbleached
Standard grades
Bleachable grades
Sulfate, unbleached
Standard grades
Groundwood
Standard unbleached

St. Raymond Paper, Ltd.
1510 Drummond St., Montreal 25, Que.
Mills at:
Desbiens, Que.
St. Raymond, Que.
Agent: **St. Raymond Sales Ltd.**
1510 Drummond St., Montreal, Que.
Sulfite, unbleached
Special grades
Standard grades
Groundwood
Standard unbleached
Screenings
Sulfite
Brand: Metabetchouan

Soucy, Inc., F. F.
Chemin du Lac, Co. Temiscouata, Que.
Agent: **Bulkley, Dunton Pulp Co.**
Groundwood
Standard unbleached
Brand: Soucy, Snow Flake

Thorold Pulp Co., Ltd.
Front Street
Thorold, Ontario
Groundwood
Standard unbleached

EUROPEAN CONTINENT

AUSTRIA

Kellner-Partington Paper Pulp Co. Ltd
Hallein bei Salzburg, Austria
Mills at: Hallein & Villach
Agent: **The Borregaard Co., Inc.**
Sulfite, bleached
Dissolving and related grades
Special grades
Brands: V.S.; Super V.S.; Super A-1; A-1

FINLAND

Aanekoski O/Y
Aanekoski
Representative: **Pulp Sales Corp.**
Sulfite, bleached
Standard grades-softwood, hardwood
Special grades
Brands: Aanekoski (Green) Extra Strong; Aanekoski (Blue) Strong; Aanekoski (Black) Soft; Aanekoski (Birch) Hardwood; also semi-prime

Ahlstrom, A. O/Y
Warkaus
Representative: **Pulp Sales Corp.**
Sulfite, unbleached
Special grades
Brands: Ahlstrom (Blue) Strong; Ahlstrom BL Bleachable; Ahlstrom EB Easy Bleaching

Eklof, Aug., A/B
Borga
Representative: **Pulp Sales Corp.**
Sulfite, unbleached
Special grades
Standard grades
Brands: Eklof (Green) Extra Strong; Eklof (Blue) Strong; also semi-prime, second and third qualities, and dry screenings

Enqvist, J. W. O/Y, (Sphinx)
Lielahti
Representative: **Pulp Sales Corp.**
Sulfite, bleached
Dissolving and Special Grades
Standard grades
Brands: Sphinx (Red) for Rayon; Sphinx (Red) Extra Soft; Sphinx (Black) Soft; Sphinx (Blue) Strong; also semi-prime, second and third qualities and dry screenings.

Enso-Gutzeit O/Y
Kaukopaa
Kotka
Tainionkoski
Representative: **Pulp Sales Corp.**
Sulfate, unbleached
Special grades
Standard grades
Brands: Tornator (Seal) (Green) Extra Strong; Tornator (Seal) Strong; Tornator (Seal) L&S Light & Strong; Tornator (Seal) (BL) Bleachable; also second qualities
Sulfate, bleached
Brand: Enso; also second qualities
Sulfite, unbleached
Special grades
Brands: Tornator (Glassine); Tornator (Green) Extra Strong; Tornator (Blue) Strong; Tornator BL Bleachable; Tornator EB Easy Bleaching

Haarlan Selluloosayhtio
Lievestuore
Representative: **Pulp Sales Corp.**
Sulfite, bleached
Standard grades—hardwood
Brands: Haarla Aspen (hardwood); Haarla Birch (hardwood)

Jakobstads Cellulosa A/B
Jakobstad
Representative: **Pulp Sales Corp.**
Sulfite, unbleached
Special grades
Standard grades
Brands: Jakobstad (Green) Extra

WOOD PULP
ACER McLERNON
INCORPORATED
CANADA CEMENT BUILDING MONTREAL

prime pulps
for perfect papers
TELEGRAMS:
'WETTRE
LONDON'
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JOHNSEN
JÖRGENSEN & WETTRE
Rosemary Hay
26 FARRINGDON ST.
LONDON E.C.4
ALSO
EDINBURGH & MANCHESTER

Strong; Jakobstad (Green) G Glassine; Jakobstad (Blue) Strong; also semi-prime, second quality, dry screenings

Joutseno-Pulp O/Y
Pulp
Representative: **Pulp Sales Corp.**
Sulfate, unbleached
Special grades
Standard grades
Brands: JsssP (Green) Extra Strong; JsssP (Blue) Strong; also second quality, dry screenings

Kajaani O/Y
Kajaani
Representative: **Pulp Sales Corp.**
Sulfite, unbleached
Special grades
Standard grades
Brands: Kajaani BL Bleachable; Kajaani EB Easy Bleaching; Kajaani (Blue) Strong; Kajaani (Green) Extra Strong; also semi-prime qualities and dry screenings

O/Y Kaukas A/B
Kaukas
Representative: **Pulp Sales Corp.**
Sulfite, bleached
Dissolving and special grades
Standard grades
Brands: KF One Crown; Two Crown; Three Crown; Four Crown for viscose; KF One A, Two A for Acetate; KF (Blue) Strong; KF (Black) Soft; KF (Red) Extra Soft; also second and third qualities

Kemi, O/Y
Kemi
Representative: **Pulp Sales Corp.**
Sulfite unbleached
Special grades
Standard grades
Brands: Kemi (Green) Extra Strong; Kemi (Blue) Strong; also semi-prime, second and third qualities and dry screenings
Sulfate, unbleached
Special grades
Standard grades
Brands: Kemi OK Strong; Kemi W; Kemi Con Condenser; also second and third qualities

Kymmene, A/B
Kuusankoski
Representative: **Pulp Sales Corp.**
Sulfite, bleached
Special grades
Standard grades
Brands: Kuusankoski (Green) Extra Strong Bond Special; Kuusankoski (Green) Extra Strong Bond

Lohja-Kotka, O/Y
Lohja
Representative: **Pulp Sales Corp.**
Sulfate, unbleached
Standard grades
Brand: Lohja (Blue) Strong

Nokia O/Y
Nokia
Representative: **Pulp Sales Corp.**
Sulfite, unbleached
Special grades
Standard grades
Brands: Nokia (Green) E Extra Strong; Nokia (Blue) E Strong; Nokia BL E Bleachable

Oulu O/Y
Oulu
Representative: **Pulp Sales Corp.**
Sulfate, unbleached
Special grades
Standard grades
Brands: Oulu (Green) Extra Strong; Oulu (Blue) Strong
Sulfate, semi-bleached
Brands: Oulu Polaris 65, 70

Rauma Repola O/Y
Rauma
Representative: **Pulp Sales Corp.**
Sulfite, bleached (new process)
Dissolving and Special grades
Brands: Rauma R, RR, RRR, for Rayon

Rosenlew, W. and Co., A/B
Bjorneborg
Representative: **Pulp Sales Corp.**
Sulfite, bleached
Dissolving and Special grades
Standard grades
Brands: Rosenlew VR, VS, J, VV, Alpha; Rosenlew R, RR for Rayon, F for photo; VP for parchment; Rosenlew (Black) Soft; Rosenlew (Blue) Strong; also semi-prime qualities

Serlachius, G. A., O/Y
Mantta
Representative: **Pulp Sales Corp.**
Sulfite, bleached
Special grades
Standard grades
Brands: G.S. (Blue) Strong; G.S. (Green) Extra Strong; G.S. (Green) G Extra Strong Glassine
Sulfite, unbleached
Special grades
Standard grades
Brands: G.A.S. (Blue) Strong

Stockfors, A/B
Lovisa
Representative: **Pulp Sales Corp.**
Dry groundwood (in thin sheets)
Standard unbleached
Brand: Stockfors

Sunila O/Y
Sunila
Representative: **Pulp Sales Corp.**
Sulfate, unbleached
Special grades
Standard grades
Brands: Sunila (Green) Extra Strong; Sunila (Blue) Strong; Sunila 400; Sunila L&S Light and Strong; Sunila Special Washed
Sulfate, semi-bleached
Brand: Sunila (Semi-T)

Svarta Bruk, O/Y, A/B
Svarta
Representative: **Pulp Sales Corp.**
Dry groundwood (in thin sheets)
Standard unbleached
Brand: Svarta

Toppila, O/Y
Oulu-Uleaborg
Representative: **Pulp Sales Corp.**
Sulfite, unbleached
Standard grades — softwood, wet pulp
Brand: Toppila (Blue) Strong; also second and third qualities

Veitsiluoto O/Y (V.L.)
Veitsiluoto
Representative: **Pulp Sales Corp.**
Sulfite, unbleached
Standard grades
Brands: VL (Green) Extra Strong; VL (Blue) Strong; also semi-prime, second and third qualities, and dry screenings
Semi-chemical pulp
Special grades—wet pulp
Brands: VL (Blue) SA; VL (Black) SA

Yhtyneet Paperitehtaat O/Y
Jamsankoski and Walkiakoski
Representative: **Pulp Sales Corp.**
Sulfite, bleached
Standard grades — softwood
Brands: Ilves (Black) Soft
Sulfite, unbleached
Special grades
Standard grades
Brands: Walkiakoski (Blue) Strong; Walkiakoski BL Bleachable

FRANCE

L'Alfa S.A.
Paris, France
Agents: **The Parsons & Whittemore/ Lyddon Organization**
Bleached Esparto

WEST GERMANY

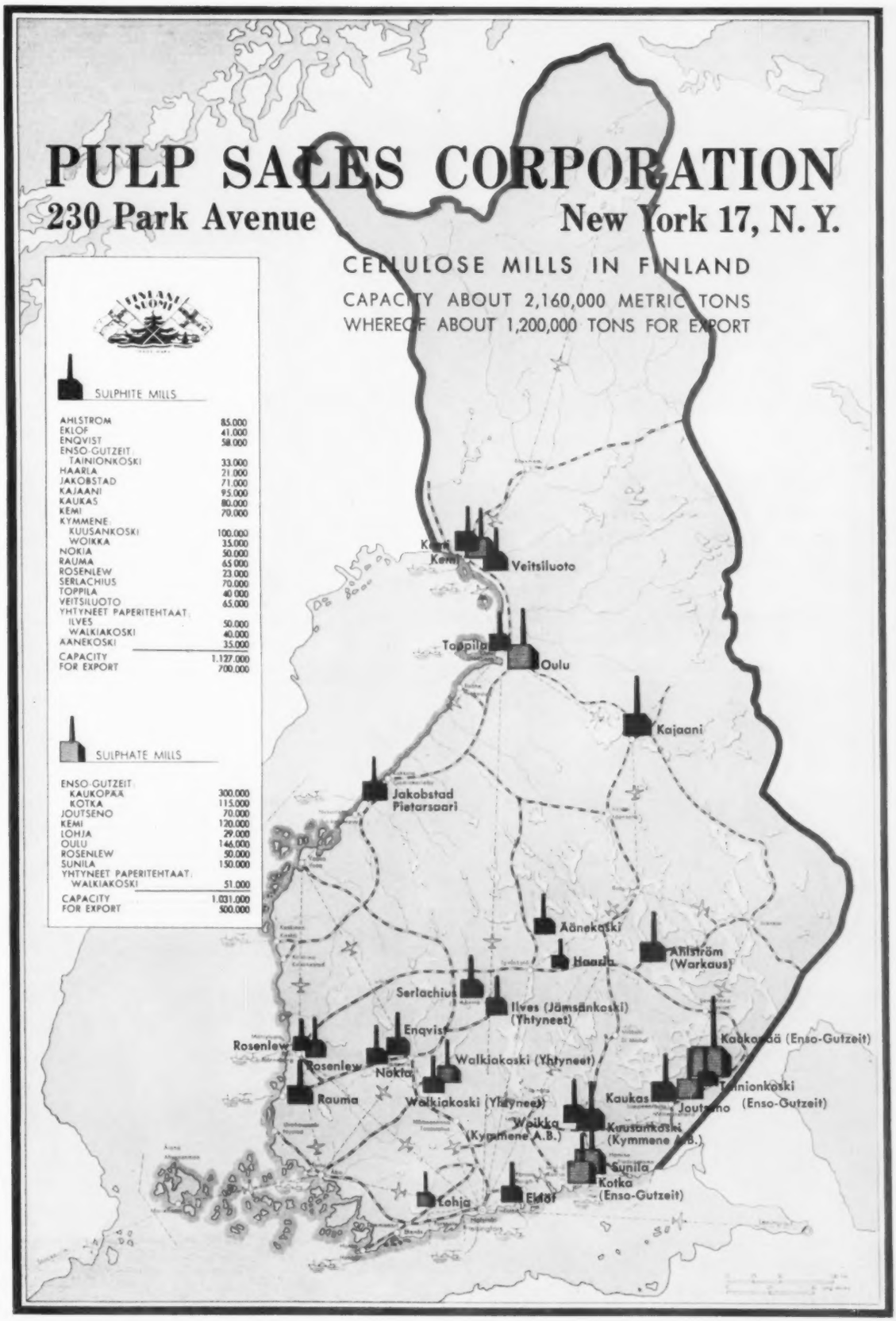
Zellstofffabrik Waldhof
Leberberg 9, Wiesbaden, Germany
Agent: **Castle & Overton, Inc.**
Bleached sulfite

THE NETHERLANDS

Coop. Stroocartonfabriek "DE EENDRACHT"
Appingedam, Holland
Agent: **Eduard Van Leer,** P. O. Box 105, Amsterdam
Bleached Monosulfite straw pulp
Brand: A 1

N. V. Stroostoffabriek "PHOENIX"
Veendam, Holland
Agent: **The Parsons & Whittemore/ Organization**
Bleached sulfate straw pulp, dry
Brand: Phoenix "Superior"

N. V. Maatschappij tot Stroveredeling "SOVE"
Arnhem, Holland
Bleached Celdecor-Pomilio straw pulp, dry
Brand: Sove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New York 17, N. Y.
CELLULOSE MILLS IN FINLAND
CAPACITY ABOUT 2,160,000 METRIC TONS
WHEREOF ABOUT 1,200,000 TONS FOR EXPORT
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AHLSTROM 85.000
EKLOF 41.000
ENQVIST 58.000
ENSO-GUTZEIT:
TAINIONKOSKI 33.000
HAARLA 21.000
JAKOBSTAD 71.000
KAJAANI 95.000
KAUKAS 80.000
KEMI 70.000
KYMMENE:
KUUSANKOSKI 100.000
WOIKKA 35.000
NOKIA 50.000
RAUMA 65.000
ROSENLEW 23.000
SERLACHIUS 70.000
TOPPILA 40.000
VEITSILUOTO 65.000
YHTYNEET PAPERITEHTAAT:
ILVES 50.000
WALKIAKOSKI 40.000
AANEKOSKI 35.000
CAPACITY 1.127.000
FOR EXPORT 700.000
SULPHATE MILLS
ENSO-GUTZEIT:
KAUKOPAA 300.000
KOTKA 115.000
JOUTSENO 70.000
KEMI 120.000
LOHJA 29.000
OULU 146.000
ROSENLEW 50.000
SUNILA 150.000
YHTYNEET PAPERITEHTAAT:
WALKIAKOSKI 51.000
CAPACITY 1.031.000
FOR EXPORT 500.000
Veitsiluoto
Toppila
Oulu
Kajaani
Jakobstad
Pietarsaari
Äänekoski
Ahlström
(Warkaus)
Serlachius
Ilves (Jämsänkoski)
(Yhtyneet)
Enqvist
Rosenlew
Walkiakoski (Yhtyneet)
Nokia
Rauma
Kaukas
Joutseno
(Enso-Gutzeit)
Kuusankoski
(Kymmene A.B.)
Sunila
Kotka
(Enso-Gutzeit)
Lohja
Eka

NORWAY

Borregaard, A/S
Sarpsborg
Agent: **The Borregaard Co., Inc.**
Sulfite, bleached
Dissolving and related grades
Special grades
Standard grades
Brands: VS; Super VS; Super A 1; Super A 1 Photo; Super A 1 Photo Soft

Greaker Cellulosefabrik A/S
Greaker
Agent: **Price & Pierce, Ltd.**
Sulfite, bleached
Special grades
Standard grades
Brand: Greaker Sunshine

Hurum Fabriker
Tofte in Hurum
Owner: Lovenskiold-Vaekero
Agent: **Castle & Overton, Inc.**
Sulfate, bleached and unbleached

Katfos Fabriker, A/S
Geithus
Agent: **Castle & Overton, Inc.**
Sulfite, unbleached

Krogstad Cellulosefabrik A/S
Krogstad, pr. Mjondalen
Mjondalen
Agent: **Castle & Overton, Inc.**
Sulfite, bleached
Standard grades

Tofte Cellulosefabrik A/S
Oslo
Agent: **Castle & Overton, Inc.**
Sulfite, bleached
Special grades
Standard grades

Toten Cellulosefabrik A/S
Nygaard Station
Gjovikbanen
Agent: **Castle & Overton, Inc.**
Sulfite, bleached
Standard grades
Brands: Toten TTT Prime Bleached

Vestfos Cellulosefabrik A/S
Vestfossen Railway Station
Vestfossen
Agent: **Castle & Overton, Inc.**
Sulfite, bleached
Special grades
Standard grades

Viul Tresliperi, A/S
Viul Station
Honefoss
Agent: **Castle & Overton, Inc.**
Groundwood
Dry and Wet

SWEDEN

Bengtsfors Sulfitaktiebolag
Bengtsfors
Agents: **Lyddon & Co. (America) Inc., Parsons & Whittemore, Inc.**
Sulfite, bleached
Standard grades
Brands: Bengtsfors Prime Bl.; Dissolving and related grades
Brands: Corona Super I; Corona Super II; Corona USA

Bergvik och Ala A/B
Soderhamn
Agent: **Elof Hansson, Inc.**
Sulfite, unbleached (Mitscherlich)
Standard grades
Sulfate, unbleached
Standard grades
Brands: Goat S; Circle G; Goat Kraft; Star; J

Billeruds A/B
Saeffle
Agent: **Elof Hansson, Inc.**
Sulfite, bleached
Dissolving and related grades
Special grades
Standard grades
Brands: Billerud S; SS; VL; Billerud Castle

Bure A/B
Burea
Agent: **Cellulose Sales Co., Inc.**
Groundwood
Dry
Brand: Bure

EH

ELOF HANSSON, INC.

WOOD PULP · PAPER

HARDBOARD · PLYWOOD · ACOUSTICAL TILE

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WOOD PULP
QUALITY BRANDS FOR ALL GRADES
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BLEACHED SULPHITE
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INCORPORATED
250 PARK AVENUE • NEW YORK 17, N. Y.
TELEPHONE: YUkon 6-7870

Dynas A/B
Waija
Agents: **Gottesman & Co., Inc.**
Perkins-Goodwin Co.
Sulfate, unbleached
Special grades
Standard grades
Brands: Dynas; Dynas Chlorine No. 5

Eds Cellulosafabriks A/B
Eds Bruk
Agent: **Elof Hansson, Inc.**
Sulfate, unbleached
Special grades
Brands: Eds Two Stars Soft A; Light & Strong Kraft

Edsvalla Bruk, A/B
Edsvalla
Agent: **The Borregaard Co., Inc.**
Sulfite, bleached
Dissolving and related grades
Special grades
Standard grades
Brands: Edsvalla VS; Edsvalla Super VS; Edsvalla Superaceta

PULPS for EVERY PAPER MAKING REQUIREMENT

KORSNAS AKTIEBOLAG

BLEACHED SULPHITES
Roburwite Extra
Korsnas Tissue
Korsnas Super Tissue

RAYON PULP
Korsnas Silk

BLEACHED SULPHATES
Vigorwite Kraft
Manila Kraft

MO & DOMSJO A. B.

BLEACHED SULPHITES
White Horse Strong
White Horse Greaseproof
White Horse Soft
Silverleaf Birch
White Aspen Special

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Dissolving & High Alpha Pulps for Rayon, Plastics & Specialties

BLEACHED SULPHATES
Husum Extra White Bleached Kraft
Husum White Birch

UNBLEACHED KRAFT
Husum Prime Unbleached Kraft

STORVIKS SULFIT AKTIEBOLAG
UNBLEACHED SULPHITES
Storvik "HS" Extra Strong Mitscherlich
Glassine Mitscherlich

HYLTE BRUKS AKTIEBOLAG
UNBLEACHED SULPHITES
HYLTE BRUK H.1. Prime Unbleached Sulphite

Exporters of Woodpulp

Pagel, Horton & Co., Inc.

347 Madison Avenue, New York 17, N. Y.

ESTABLISHED 1916

Forshaga Sulfit A/B
Forshaga
Agent: **The Borregaard Co., Inc.**
Sulfite, bleached
Dissolving and related grades
Standard grades
Brands: Forshaga VS; Forshaga Super VS; Forshaga "F:Haga" and "F:Haga ST"

Forss A/B
Kopmanholmen
Agent: **Price & Pierce, Ltd.**
Sulfate, bleached
Special grades
Standard grades
Sulfate, unbleached
Special grades
Brands: Forss Star; Forss OK

Forsse Woodpulp Mill
Oesterforse
Agent: **John B. Lynch & Co., Inc.**
Groundwood
Special unbleached dry

Gota Sulfitaktiebolaget
Gota
Agent: **Perkins-Goodwin Co.**
Sulfite, unbleached
Standard grades
Glassine grades

Hellefors Bruks A/B
Hellefors
Agent: **Elof Hansson, Inc.**
Sulfite, strong and easy bleaching
Brands: HB Strong; HB EB

Hissmofors A/B
Krokom
Agent: **Bulkley, Dunton Pulp Co., Inc.**
Sulfite, bleached
Standard grades
Brand: Elkhead

Hogfors Trasliperi, A/B
Haggenas
Agent: **Gottesman & Co., Inc.**
Groundwood
Special unbleached
Standard unbleached

Hylte Bruks A/B
Hyltebruk
Agent: **Pagel, Horton & Co., Inc.**
Sulfite, unbleached
Special grades
Standard grades
Brands: Hylte Bruk H.1 Prime unbleached Sulfite; Hylte Bruk H.2; Hylte Bruk H.3

Iggesunds Bruk, A/B
Iggesund
Agents: **Bulkley, Dunton Pulp Co., Inc.**
Gottesman & Co., Inc.
Perkins-Goodwin Co.
Sulfite, bleached
Standard grades
Sulfate, bleached
Special grades
Standard grades
Groundwood
Brands: Golden Anchor, Special, White Anchor

Kopparfors A/B
Ockelbo
Agent: **Perkins-Goodwin Co.**
Sulfate, bleached
Special grades
Super grades
Standard grades

THANKS TO MODERN ALCHEMISTS

WELL-KNOWN QUALITY PULP TRADE NAMES

SEAGULL Bleached Soda Pulp
STORMONT Bleached Sulphite
CRABTREE Groundwood Pulp
DONNACONA Unbleached Sulphite
WINDSOR Unbleached Kraft

The combined knowledge and experience of tree scientists and modern pulp and paper technologists are producing new and better pulps year by year for the use of business and industry.

Years of patient experiment are producing vital results as ingenious new processes are turning a wider variety of trees into top quality pulps.

While supplying pulp to paper and allied industries, Howard Smith Paper Mills Limited also works hand in hand with Nature in its modern reforestation programme. Forest life is renewed and replenished; scientific cutting operations provide selected wood for pulp and help in the forest's natural growth.

HOWARD SMITH PAPER CANADA

Howard Smith Paper Mills Limited

PULP SALES DEPARTMENT

MANUFACTURERS IN CANADA OF HIGH QUALITY WOODPULP

407 McGill Street **Montreal 1, Canada**

Sulfate, unbleached
Special
Brands: Norrland One Star; KHB; Norrland Three Star; KHB Condenser; Norrland Four Star

Korsnas A/B
Gavle 2
Agents: **Pagel, Horton & Co., Inc.**
Sulfite, bleached
Dissolving and related grades
Special grades
Super grades
Standard grades
Sulfate, bleached
Super grade
Semi-bleached
Brands: Roburwite Extra Prime Strong Bl. Mitscherlich Sulphite; Korsnas Super Tissue Prime Bl. Sulphite; Rayon Pulp-Korsnas Silk; Vigorwite Extra Prime Bl. Kraft; Manila Prime Semi-bleached Kraft.

Mackmyra Sulfit A/B
Mackmyra
Agent: **Bulkley, Dunton Pulp Co., Inc.**
Sulfite, unbleached
Special grades
Brands: MS; M

Marma Langrors A/B
Lottefors
Agent: **Price & Pierce, Ltd.**
Groundwood
Special unbleached
Brands: Lottefors L

Marma Langrors A/B
Soderhamn
Agent: **Price & Pierce, Ltd.**
Sulfate, unbleached
Special grades
Standard grades
Brand: Marma LJ Kraft; Marma LJ Kraft '50' Insulating

Marma Langrors A/B
Vallvik
Agent: **Price & Pierce, Ltd.**
Sulfite, unbleached
Special grades
Standard grades
Screenings
Brands: LJ Two Crown Extra, LJ One Crown

Mo & Domsjo, A/B
Main Office: Ornskoldsvik
Sales Office: Strandvagen 1, Stockholm
Mills at: Domsjo, Hornefors and Husum
Agent: **Pagel, Horton & Co., Inc.**
Sulfite, bleached
Dissolving and related grades
Special grades
Super grades—Softwood, hardwood
Standard grades — softwood, hardwood
Sulfate, bleached
Super grades—softwood, hardwood
Sulfate, unbleached
Super grade—softwood
Brands: Husum Extra White Prime Bl. Kraft; Husum White Birch Prime Bl. Sulphate; Husum Prime Unbleached Kraft; White Horse Strong Prime Bleached Sulphite; White Horse Greaseproof Prime Bleached Sulphite; White Horse Soft Prime Bl. Sulphite; Silverleaf Birch Prime Bleached Sulphite; White Aspen Prime Bleached Sulphite; White Aspen Special Prime Bleached Sulphite; Modocell; Modosilk; Modosilk Extra; Modosilk Super; Modocord; Modoceta; Modofoto; Modoplast; Modolint.

Munkedals A/B
Munkedal
Agent: **Elof Hansson, Inc.**
Sulfite bleached
Standard grades — softwood, hardwood
Brands: Munkedal SGR; SAB

Munksjo A/B
Jonkoping
Agent: **Gottesman & Co., Inc.**
Sulfate, bleached
Standard grades
Brand: Aspa

Oskarstrom Sulphite Mills A/B
Oskarstrom
Agent:
Elof Hansson, Inc.
Sulfite
Easy bleaching
Strong
Brands: Oskarstrom TT/S; TT; H; X; PP

Rottneros Bruk, A/B
Rottneros
Agent: **Elof Hansson, Inc.**
Groundwood
Standard unbleached—wet

Sandvikens Cellulosa A/B
Sandviken
Agent: **John B. Lynch & Co., Inc.**
Sulfate, unbleached
Special grades
Brands: S Crown S; Special Cable

Scharins-Soner A/B
Clemensnas
Agent: **Elof Hansson, Inc.**
Groundwood
Standard unbleached—dry
Brand: Skelleftea

Statens Skogsindustrier, A/B
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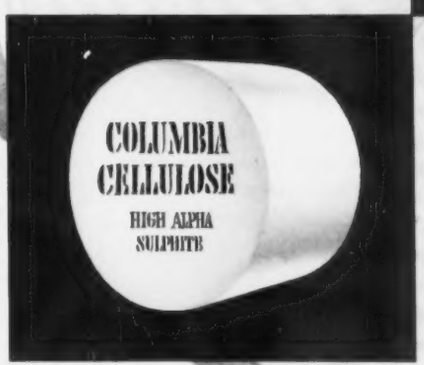

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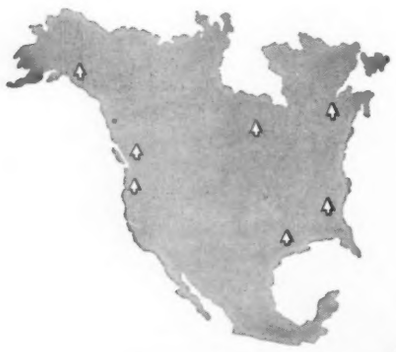

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Dissolving Pulps Face Realignment

Mills will make paper pulps in 1957 and 1958. North American dissolving exports will increase. New uses found

By REX VINCENT
Vice President and Technical Consultant, Bulkley, Dunton Pulp Co.

Written especially for PULP & PAPER'S WORLD REVIEW NUMBER

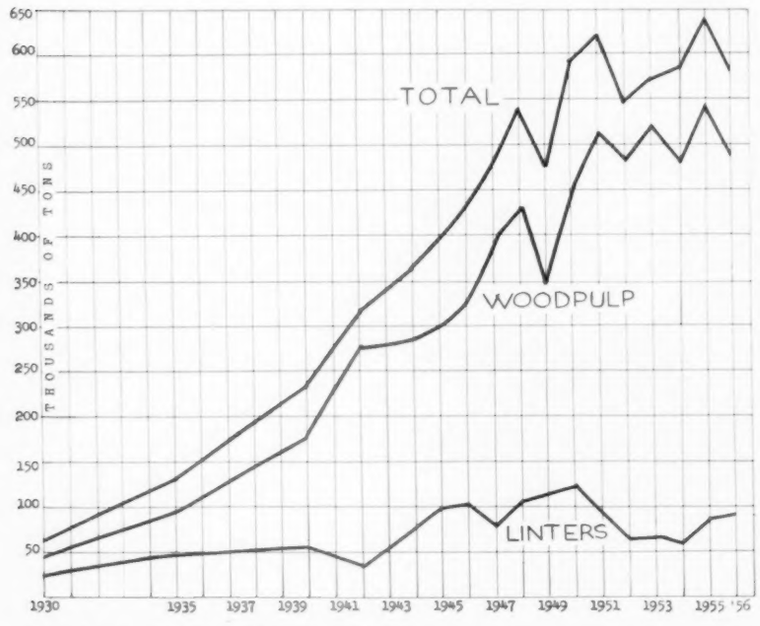
● Growth is not only an interesting phenomena, it is an intoxicant and it is habit-forming. Once started it is most difficult to abandon; it hurts to lose it; it becomes impossible to divorce it from planning and thinking. Each year must be bigger than the one before, not only because of the population increase but because of new and expanded uses. The paper industry is in the midst of one of these heady periods as each year sees several million more tons produced than the year before.

The market pulp sector of the industry has been in one of those phases and many people believe it will have to face the music of realignment in the near future as more productive units come into being. The purified cellulose segment of market pulp is already counting its bruises and there are probably more to come. With a capacity, in 1956, to produce in North America about 1,900,000 tons, it manufactured 1,352,000 tons. What happened to the difference of almost 600,000 tons, the equivalent of five large mills?

The answer is relatively simple: something less than half of it disappeared in shutdown time and the balance was devoted to the production of paper pulp. Some of the buyers of paper pulp say that this was a good thing because without it there would have been a shortage of paper pulp. Perhaps. But don't overlook the possibility that there would have been a sizable over-supply if those mills had all been operated full time. So, in 1956, there was an unused dissolving pulp capacity of about 600,000 tons and about half of this was used for paper pulp.

REX VINCENT—"By simple arithmetic, we can obtain an added capacity of 900,000 tons for paper pulp this year. . ."

This year, 1957, paper pulp capacity is being expanded by approximately 600,000 tons. Thus, by a very simple and elemental operation of arithmetic without any consideration for side reactions and assuming the same shutdown time or its utilization for dissolving grades, we can obtain a capacity for paper pulp of 900,000 tons on an annual basis that we have not needed up to now. The conclusions from this arithmetic can be yours.



Woodpulp Still Far Ahead of Linters
This chart shows how woodpulp has been outstripping cotton linters pulp as a raw material for all kinds of rayon-acetate products from textiles to tire cord. A record breaking 546,900 tons of woodpulp was consumed in 1955, but consumption dropped off to 487,000 tons in 1956—still about 10,000 tons above 1954. Linters climbed 2,800 tons to 90,400 in 1956. The total of both raw materials dropped off to 577,000 tons in 1956.

Will Compete with New Paper Pulp Capacity . . .

It is not economical for a dissolving pulp mill to make paper pulp. Too much equipment stands idle and depreciates but if paper pulp will pad out production time and keep the other facilities running full it is sensible to do it to a limited extent.

At some time in 1957 or 1958 the unrequired dissolving pulp capacity will be competing against the newly constructed paper pulp capacity. Somewhere, somehow, sometime, some of this capacity will be withdrawn; that seems obvious and it will probably be the older units that will be withdrawn first. This article is intended to be a review of things past more than a forecast of the future but it was a review of 1956 that prompted these remarks.

In 1956 the use of woodpulp in

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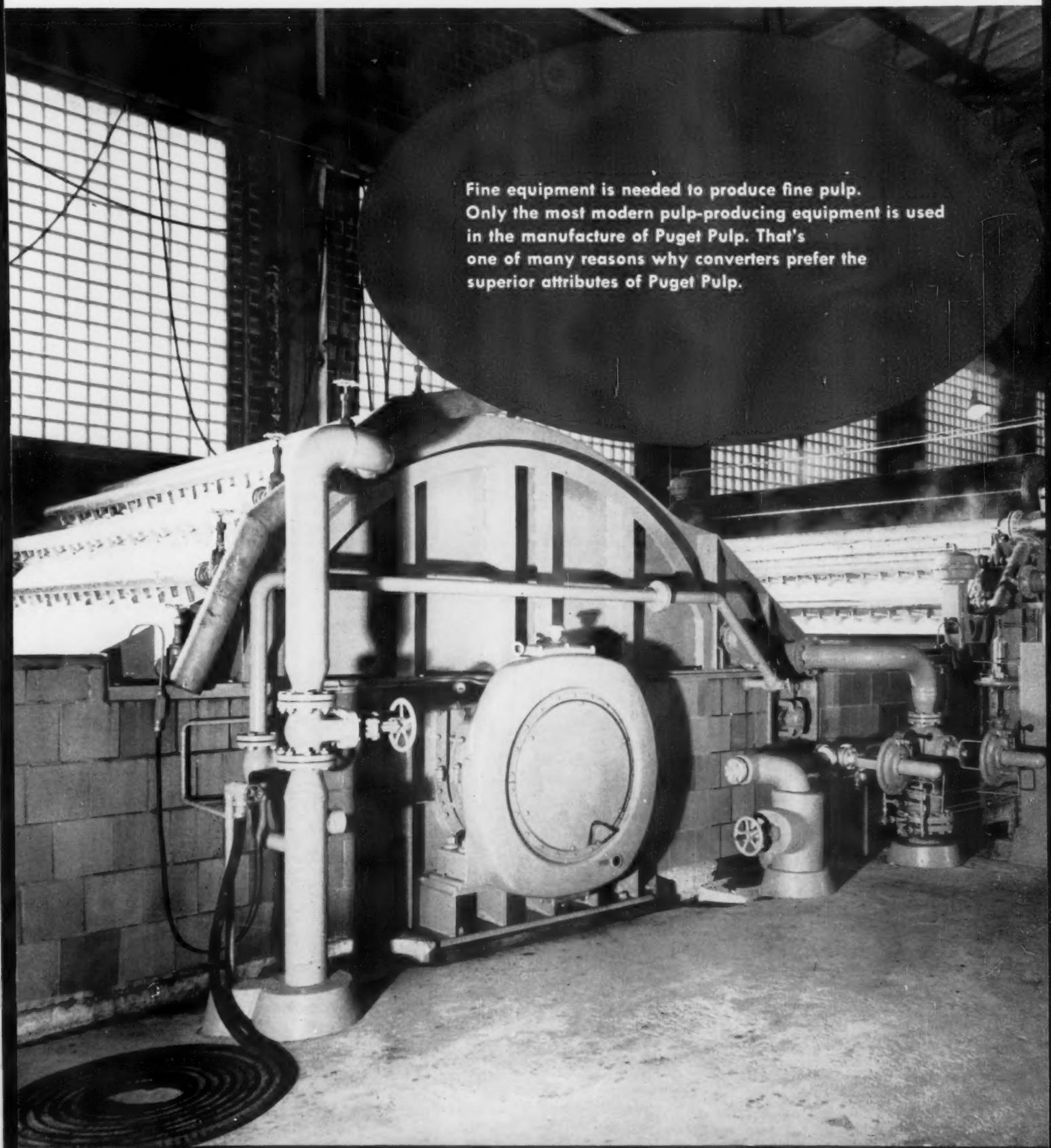

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rayon fell 12% below 1955; the total use of the dissolving grades fell only 3% and exports increased by 4%. These figures are on a North American basis and they demonstrate that uses other than rayon picked up some of the slack. They also show that the statement made in last year's review concerning exports was correct. There it was emphasized that the export of this pulp was most important but that there probably would be no great upward leaps such as occurred in 1954. The actual tonnage increase in exports was 14,000 tons. Of this increase the United States had 5,000 tons and Canada 9,000 tons.

80% of Potential is Overseas . . .

The increase of exports depends on two things: the activity and expansion of overseas yarn producers, and competition. "Textile Organon" has presented statistics that show that during 1956 world production of rayon and acetate increased by 99,000 tons or almost 4%. On a percentage basis the North American producers went along as their exports gained by the same percentage but on a tonnage basis they lost ground.

If the world production of rayon gained 99,000 tons and the United States production lost 56,000 tons, then overseas yarn producers gained 155,000 tons. Thus, the factor of activity was favorable but the competition must have been very keen since North American producers got only about 10% of the increase. Inventory swings could have had a bearing on this but it would be slight as the world production of rayon and acetate has been steadily increasing for five years. The United States now produces (as of 1956) only 22% of the world production.

Thus, the dissolving pulp people must recognize that nearly 80% of their potential market lies overseas and this presents a serious problem because the United States and its government are not export minded. There are no bilateral trade treaties or payment unions to assist the exporter; he must do it all himself. He must take all the risks and he must compete for freight space with thousands of tons of government aid going at much higher rates.

In spite of these difficulties the export of these pulps must and will increase. It will be a slow painful process and undoubtedly will present many problems and headaches. From 1955 to 1956 the exports from North America increased from 24% of the production to 26% but those from the United States alone remained stable at 21%. A further interesting speculation concerns the effect the recent treaties which will form the European Community will have on imports to those six nations. This is bound to be long term but there will be great changes as commodities begin to move freely within the area.

Now 17 Dissolving Mills . . .

There was not much change in dissolving pulp capacity during 1956. It is unlikely that there will be any major change during 1957. The current capacity for North America is very near 1,900,000 tons. During this year something like 70,000 will be added as expansions are completed but next year, 1958, two mills are scheduled to be completed which will boost the figure up to almost 2,200,000 tons provided there is no reduction in capacity elsewhere in the meantime. This capacity is owned and operated by the following:

North American Dissolving Pulp Cos.	Number of mills
Rayonier Inc.	7
Weyerhaeuser Timber Co.	1
Brown Co.	1
International Paper Co.	1
Buckeye Cellulose Corp.	1
Ketchikan Pulp Co.	1
Fraser Companies Ltd.	1
Canadian Internat'l. Paper Co.	3
Columbia Cellulose Co. Ltd.	1

Competition of Cotton Linters . . .

Woodpulp is not the only source of cellulose for rayon-acetate as cotton linter pulp supplies from 11% to 15% of the total. During 1956 the price of linter pulp began to reflect the results of years of government support and acreage control. The prices of raw linters began to move upward and the pulp price immediately reacted. Beginning in January it moved from $205.00 per ton to $243.00 per ton by November. Then in two big jumps within ten days in January of 1957 the price rose to $280.00 per ton. It has remained there and informed opinion is that it will not go any higher. But that was high enough to cause a major swing from cotton linter to woodpulp for 1957 and this will be reflected in an increased quantity of woodpulp rayon for 1957. Some people believe that there is in the offing a continually diminishing supply of raw linters and that change-overs being made now will more or less be permanent.

Imports from Canada continue to decline and this has gone on long enough now to establish a trend. Since 1953 these have been falling at an average rate of about 15,000 tons per year and in 1956 were as low as they have been since 1949. The Canadians have offset this decline in

TABLE I

U. S. PURIFIED WOOD CELLULOSE

(In Short Tons)

Year	*Production*	*Imports*	*Exports*	*Net Available*
1938	171,650	65,220	72,800	164,070
1940	288,500	113,945	115,204	287,241
1943	369,731	129,380	22,884	476,226
1944	429,545	132,675	10,729	551,491
1945	355,820	146,030	13,030	488,820
1946	295,680	198,540	9,300	484,920
1947	408,460	248,070	14,570	641,960
1948	421,924	239,842	14,665	647,101
1949	371,422	154,348	3,857	521,913
1950	473,210	238,856	27,284	684,781
1951	615,776	230,038	32,944	812,920
1952	705,828	223,340	61,850	867,315
1953	678,180	255,781	66,513	867,448
1954	775,003	230,384	161,916	843,471
1955	980,875	215,100	207,100	988,875
1956	940,660	201,600	212,100	930,160

Source: U.S.P.P.A.

TABLE II

NORTH AMERICAN PURIFIED WOODPULP

(Short tons)

Year	*Production*	*Imports*	*Exports*	*Net Available*
1947	707,000	23,700	56,000	674,700
1948	754,000	14,900	80,400	688,500
1949	620,930	4,550	83,150	542,330
1950	796,312	9,745	83,149	722,908
1951	1,014,240	4,152	151,029	867,363
1952	1,129,400	3,317	181,471	951,245
1953	1,132,338	1,549	214,658	919,229
1954	1,230,588	2,241	307,729	925,100
1955	1,400,950	508	341,080	1,060,378
1956	1,352,410	——	355,100	997,310

A message to papermakers from
M. A. Brown, general sales manager, Rayonier Incorporated

Why this leading cellulose producer is a major supplier of wood pulp to the paper industry

Here are five solid reasons why Rayonier makes this statement a matter of corporate policy

1. New and Enlarged Production Facilities. When the first unit of our new Jesup, Georgia, Division came on stream in 1954, Rayonier became firmly entrenched as a major market supplier of quality bleached wood pulps to the paper industry. This position will be further fortified in 1957 when our second 100,000 ton capacity mill at Jesup comes into production. Additional expansion activity at six other divisions reaffirms our position.

2. Three Major Production Areas. Now Rayonier offers both sulfite and sulfate pulps from three regions of North America: the Southeast for sulfate pulps; the Pacific Northwest and British Columbia for our sulfites. Such diversification and versatility assure customers of product and delivery reliability . . . plus an unusual degree of flexibility to meet their every demand.

3. Direct Sales. Our sales policy for bleached wood pulps is direct manufacturer contact with our customers. Our own sales force calls on you. Overseas we employ locally appointed agents to serve the need of their specific sales areas.

4. Research and Technical Services. All our products are heavily supported with Rayonier on-the-spot technical services, in turn backed up by three advanced research divisions in the U.S.A. and Canada. This is additional assurance customers' requirements are exactingly fulfilled . . . and that quality performance and all other benefits are derived from Rayonier wood pulps.

5. A Basic Raw Material Supplier. Rayonier's full line of wood pulps for papermaking is supplemented by the most complete line of chemical cellulose in the industry.

Above all, Rayonier is first a supplier of basic raw materials.

RAYONIER INCORPORATED *cellulose chemistry*

Executive and General Sales Offices: 161 East 42nd Street, New York 17, N. Y.

shipments to the United States by increasing their overseas shipments but this has not prevented the production in Canada from falling from 455,000 tons in 1954 to 412,000 tons in 1956. It is believed that some capacity in Canada is gradually going over to paper pulp and staying there.

Dissolving Prices are Steady

The price thermometer was steady for another year on the basic grades and this stretches the period of little change to nearly six years. This is really a phenomenal performance and it is very doubtful if there is any other raw material that has remained stable in price over that period. It has been a blessing for the consumers, who probably do not appreciate it as much as they should, and it should be emphasized that over that same period freight rates have advanced $5.20 per ton. The basic prices still in effect are:

Grade	Price
Standard Cellophane	$185
Standard Filament Yarn	$185
High Tenacity Yarn	$195
Standard Acetate	$225

The basic statistics are shown in Tables I and II, the latter placing then on a North American basis. The table for imported pulp is omitted since the pulp coming in from overseas is negligible.

"Full of Holes Punched by Nylon?" . . .

The year 1951 still remains as the peak year for rayon acetate production. Since that year the population of the United States has increased by approximately 12,000,000 but the rayon acetate production has declined from 1951 to 1956 by 73,000 tons. Now, is this significant? Does it mean that the growth of rayon acetate is ended, that there will not even be an increase to keep up with population growth? Or does it mean that the producers went too far in their craze for the production of tire cord and let other uses suffer and thereby putting all their eggs in one basket now find that basket full of holes punched by nylon.

As Table III shows, the largest segment of rayon production is filament yarn, amounting to about half of the total year after year. Of this, tire cord has taken about two-thirds in 1953 and about the same amount in 1956. The figure for 1956 is estimated at 160,000 tons which is 28% of the total. In 1953 tire cord represented 35% of the total and this loss has been nylon's gain and just about represents the decline in rayon production. It no longer is affected by the textile business so much as it is by the automobile business. 1953 was a good year for rayon because it was a good year for automobiles. 1956 was not a good year because automobiles were down and because of the heavy swing to nylon.

TABLE III

U. S. Rayon-Acetate Production by Types (Short Tons)

Year	Viscose & Cuprammonium Filament	Acetate Filament	Viscose Staple & Tow	Acetate Staple & Tow	Total
1949	272,150	127,500	64,900	32,350	496,900
1950	318,500	163,500	94,500	58,500	630,000
1951	329,050	150,050	103,650	64,350	647,100
1952	297,250	117,150	105,900	47,600	567,900
1953	328,800	114,650	109,550	45,450	598,450
1954	254,450	98,950	155,750	33,700	542,850
1955	317,500	115,050	168,900	28,900	630,350
1956	278,400	96,400	170,500	28,650	573,950

TABLE IV

Woodpulp Vs. Linters Pulp

Year	Total Pulp	Woodpulp Consumed	%	Linters Pulp Consumed	%
1930	63,850	45,000	62	27,000	38
1935	131,077	86,000	63	51,000	37
1940	235,585	178,000	75	60,000	25
1942	316,308	280,500	88	39,500	12
1944	361,977	285,000	78	82,000	22
1945	396,000	297,000	74	103,000	26
1946	427,000	323,000	75	105,000	25
1947	478,000	397,000	83	81,000	17
1948	539,500	435,000	81	104,500	19
1949	476,600	348,700	73	127,900	27
1950	590,600	456,200	77	134,400	23
1951	616,300	515,500	84	100,800	16
1952	549,500	484,700	88	64,800	12
1953	589,100	522,000	89	67,100	11
1954	537,800	477,300	89	60,500	11
1955	634,500	546,900	86	87,600	14
1956	577,400	487,000	84	90,400	16

Source: Textile Organon

Table III shows the production of rayon acetate by types and it also shows how important this business of tire cord is to the future of rayon. Acetate has been in a steady decline, viscose staple has been gaining steadily as it is this form that can be blended with other fibers. Viscose filament in total has become dependent on tires. Since 1953, when nylon began to seriously enter into tire cord it has increased to about 40,000 tons which represents about 10% of the total. It is now being produced by eleven manufacturers and at least two of these have sizable expansions under way.

It is estimated by "Chemical and Engineering News" that by 1958 rayon will have lost further by 20,000 tons. There seems to be a little reluctance on the part of the nylon manufacturers to hurry into this use and it could be that they are concerned over the development of a new and cheaper fiber which could do somewhat the same thing to nylon that it has done to rayon.

The capacity survey of "Textile Organon" last year showed that the total rayon acetate capacity for July 1956 was 827,500 tons and was expected to increase to 857,500 tons by March 1957. In Jan. 1957 new figures were obtained which show that the capaciity as of Nov. 1956 was 764,500 tons and is expected to be 820,000 tons by June of 1957 and 825,500 tons by March 1958.

Obviously there has been some shifting and withdrawal of capacity. There are only slight changes forecast in rayon filament, either regular or high tenacity. Acetate filament remains stable but there are increases forecast for stable and tow, the blendable forms. Other man-made fibers, such as non-cellulosics and glass fibers, are slated for substantial expansions increasing from 307,500 tons in 1956 to 461,500 in 1958.

What's Happening in Cellophane . . .

The annual reports of those corporations manufacturing cellophane fairly glow when they reach that section dealing with its production. There are still no published statistics on this product and until one more manufacturer joins the group there will be none, as long ago it was decided by some group in Washington that the magic figure for concealing identity is five.

It is fairly well known that the

They've cleared the way for a brand new, more uniform pulp

It's only a clearing now, near Crofton, British Columbia, on the southeast coast of Vancouver Island. But by the year's end it will be the source of an outstanding new pulp. This new pulp will have unusual characteristics of uniformity, quality and workability. Brightness will be in the 88-90 range, suitable for the manufacture of high quality papers.

Here, in this clearing, British Columbia Forest Products Limited is erecting a $38,000,000 pulp mill, ultra-modern in design and operation.

Crofton Kraft furnish will consist of the finest Western pulp woods. Sawmill chips and logging salvage will all be utilized.

The mill site of 50 acres is 70 feet above sea level. The mill will be serviced by barges, deep sea vessels, railroads and trucks. Sawmill chips will arrive in 80,000 cubic-foot barges. They will also be trucked in by special trailers. The balance of the wood supply will be received as logs to be de-barked and chipped at the mill.

Mead Pulp Sales, Inc. will be sole distributor of the new Crofton Kraft bleached pulp. Plan now to take advantage of this new, *uniform* pulp and this great new source. We shall be happy to give you details about the pulp or the new British Columbia Forest Products Limited mill.

MEAD PULP SALES, INC.
Distributors of Wood Pulp
Bleached and Unbleached Chemical and Mechanical Wood Pulp
230 Park Avenue, New York 17 • 20 North Wacker Drive, Chicago 6 • 118 West First Street, Dayton 2
1504 Sherbrooke Street, West, Montreal, Canada

MEAD *pulp*

available capacity operated as full as mechanically possible and it has not been enough for American Viscose has announced an expansion of its capacity from 50,000 tons to 75,000 tons. Last year Olin-Mathieson completed its new plant and DuPont announced plans to expand its Clinton, Iowa plant by 15,000 tons. The same firm has recently stated that it would construct a 25,000 ton plant near Tecumseh, Kansas.

It is estimated that the capacity for 1956 was approximately 200,000 tons and that during the year the capacity operated completely so that the consumption of pulp would be 200,000 tons.

A recent advertisement which appeared in a national magazine challenged the reader to think of a product that was not wrapped in cellophane. Some undershirts just bought came in individual cellophane packets, the box of candy too, and blankets, pills, cookies, sweaters, and steaks. "Wrapped in cellophane" has become a magical slogan for selling the products placed inside of it. An idea has grown up that simply because a manufacturer does wrap his product in this film it is better.

Then there is also the desire of the purchaser to see what he is buying and also the knowledge that it is unused and fresh. This facet of selling becomes all important as the supermarkets increase in size and broaden the range of products which they dispense. Shelf-life becomes longer and products remain dust free, important aspects in these huge marts. There is competition here though, and very keen. Polyethylene, waxed paper, glassine, aluminum foil, pliofilm, vinyl sheeting, acetate film, all sorts of laminated papers, foils and films are available. Just name the product and the conditions and there is a material for protecting it, displaying it, or preserving it.

TABLE V

Cellulose Uses—1956
(Short Tons)

Net available for North America	977,300
Increase in producers' & consumers' inventories	28,000
Total available	949,300
Consumed in Canada	60,000
In-transit shipments	18,000
Balance available for U.S.	871,300
Rayon-acetate	487,000
Cellophane	200,000
Balance for other uses	184,300
Cellulose plastics including nitrocellulose	30,300
Misc. viscose (sponges, caps, bands, sausage casings, filters)	20,000
CMC	8,000
Other Derivatives	8,000
Sanitary napkins and absorbents	26,000
Vulcanized fibre and floc	12,000
All grades of paper	80,000

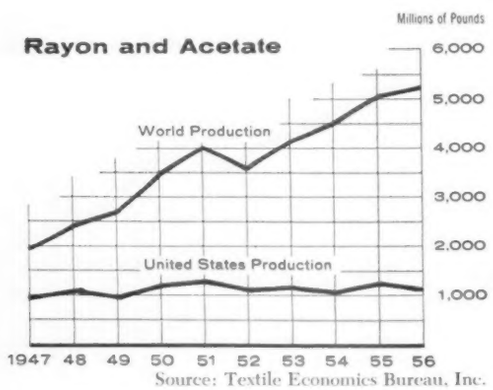
Spawns New Grades . . .

These purified woodpulps in the past few years have begun to broaden their base of consumption and in so doing they have sprouted a number of different grades, each one intended for a specific end use. This specialization moved up one more notch, for example, on the cigarette filter use of acetate tow. Obviously these fibers do not need physical strength so the pulp need not be so expensively made. The tire cord competition has spawned several new grades and one manufacturer today produces five different grades of viscose pulp not counting pulp for cellophane or the acetate grades.

Yet all this specialization has had no effect on statistical reporting. It is all lumped together as "dissolving and special alpha" and the most intense detective work is required to get any separation of figures, let alone their end use. The specialized uses are creeping up in tonnage and therefore become more important. In 1950 rayon acetate consumed 63% of the net available pulp to the United States, but in 1956 it only consumed 49% of the net available. In tons this means that uses other than rayon acetate increased from 267,000 tons to 510,000 tons. Thus the detecting job not only becomes more difficult but more important. Your forebearance is requested for speculation, estimates and guesses.

An example of what is encountered can be demonstrated in acetate pulp. According to the statistics of "*Textile Organon*" there was produced in 1956 acetate filament, staple and tow in the amount of 143,950 tons. (See Table III.) If this were all produced from woodpulp and there is no reason to believe this, it would require only 86,370 tons. There was a good deal more acetate pulp than this produced. Where did it go?

Carboxymethylcellulose continued to grow and in 1955 there was a total production of 13,600 tons. The production statistics of carboxymethylcellulose over recent years are: 8,350 tons in 1951; 7,050 in '52; 10,835 tons in '53; 11,090 tons in '54; and 13,600 tons in '55. The figures for 1956 are not available, but it is estimated that the production will be close to 15,000 tons. Currently there are three main uses of this material, the larger one by far being its use in synthetic detergents. It is also used in drilling muds and in a purified form it is being used in many food products, particularly ice cream.



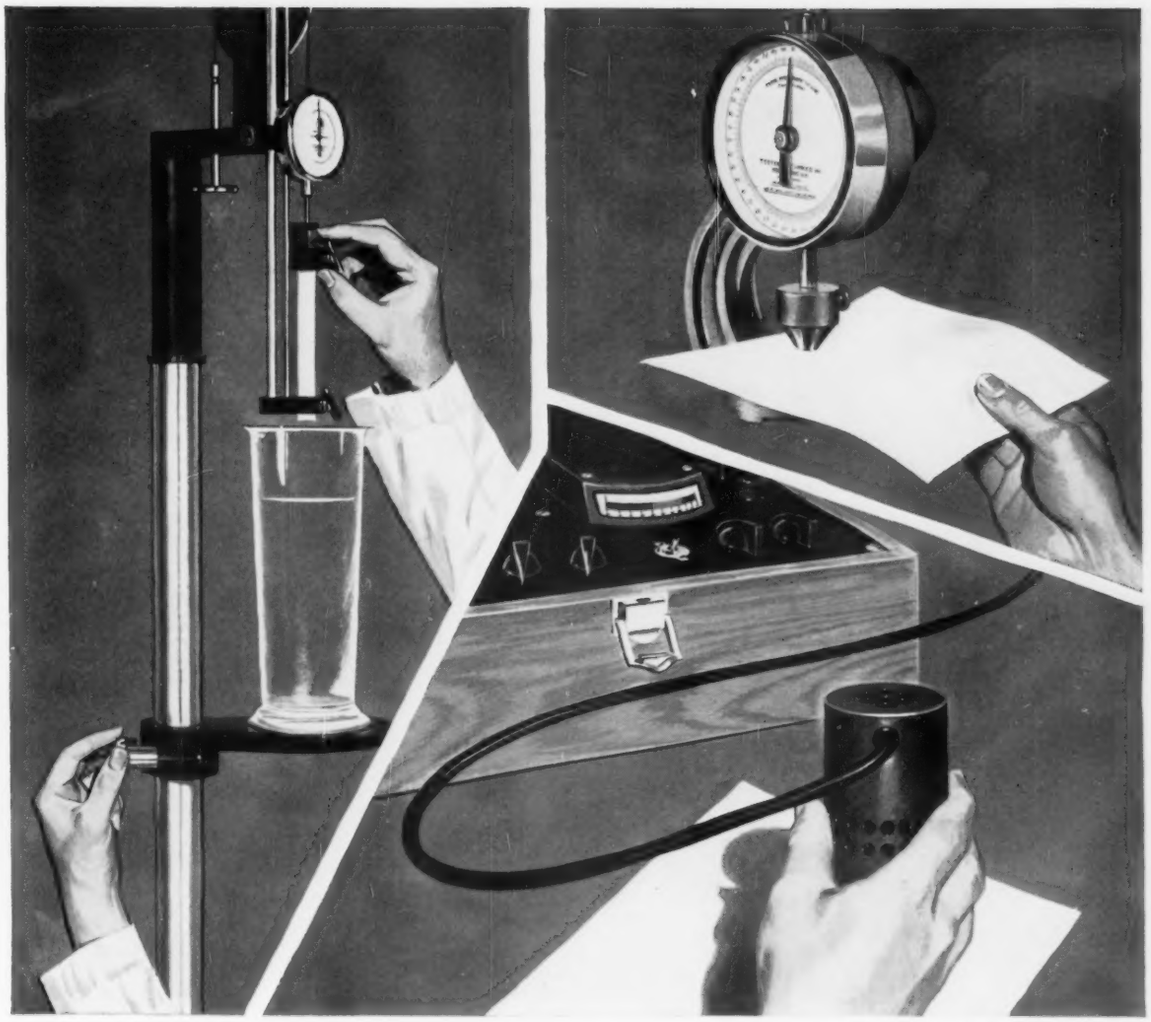
Source: Textile Economics Bureau, Inc.

What a Lot of End Uses! . . .

The varying end uses spread over a very broad range and cover such products as saturating papers and absorbent wadding, sanitary napkins and disposable diapers, reducing aids and photographic film, detergents and sponges, vulcanized fiber and artificial leather, caps, bands, lacquers, plastics and heaven alone knows what else. A very small insignificant quantity is used to fill sachet bags. But this whole area is statistically naked and confused.

The paper industry consumed 80,000 tons of these pulps but that consumption is only for grades that could be produced on paper machines, it does not include fluff for sanitary napkins or diapers.

The statistics on plastics include



Photos Courtesy TESTING MACHINES, INC.

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Brightness? Opacity? Bulk? Dimensional stability? You name the quality—and there's a SOLKA Pulp *to help you achieve it!*

America's leading paper manufacturers have depended on Brown Company for scientifically correct SOLKA Pulps to match their paper needs for more than half a century. Today, our vast timberland resources, top flight research facilities, and modern manufacturing plants offer you even finer pulps to fit your requirements.

Let us know your problems. Write Dept. PC-7, our Boston office. Address inquiries in Canada to Brown Forest Products Ltd., Castle Building, Montreal.

BROWN COMPANY

150 Causeway Street, Boston 14, Massachusetts
Mills: Berlin and Gorham, New Hampshire

the fillers and plasticizers and these sometimes amount to as much as half the weight. They are also reported as sheets, rods and tubes, but it is just not made clear that it also includes films, photographic and X-ray. Those shown are from tariff commission reports for the cellulose plastics.

It is not believed that the cellulose nitrate includes the nitrocellulose that goes into coatings, finishes, and lacquers. The figures certainly do not include any nitrocellulose that is converted into smokeless powder.

Table V represents the results of real statistics, private estimates, and personal guesses to strike a balance on the various consuming end-uses of these woodpulps.

CELLULOSE PLASTICS
U. S. Production
(in short tons)

Year	*Acetate*	*Nitrate*	*Other*
1951	48,708	3,805	5,972
1952	42,724	3,010	3,326
1953	57,285	3,800	3,136
1954	56,190	2,633	2,780
1955	66,950	2,434	2,934
1956	68,329	2,634	2,775

Directory of U. S. A. Fiber Producers

Wood cellulose is a major raw material for all kinds of acetate and viscose fiber products. Textile Organon, published by Textile Economics Bureau, Inc., annually publishes lists of the United States man-made fiber producers, including both the acetate-viscose group and the non-cellulosic group.

Many new man-made fibers have been developed, which do not use wood fiber, and the types are grouped in the non-cellulosic section.

This non-cellulosic group is growing. These are competitors for the same markets that woodpulp reaches in the form of acetate and rayon products which range all the way from textiles and carpets and drapes to tire cord. There are now 46 non-cellulosic man-made fiber plants in the U.S.A. compared with 30 rayon-acetate plants.

U.S.A. Rayon-Acetate Producers:

American Enka Corp. (rayon yarn, staple & tow)
206 Madison Ave., New York 16, N. Y.
Plants: Enka, N. C.
Lowland, Tenn. (expanding)

American Viscose Corp. (rayon & acetate yarn & rayon staple & tow)
1617 Pennsyl. Blvd., Philadelphia 3, Pa.
Plants: Lewistown, Pa.
Meadville, Pa.
Front Royal, Va.
Roanoke, Va.
Nitro, W. Va.
Parkersburg, W. Va.

Beaunit Mills, Inc., American Bemberg and Coosa Pines Divisions (rayon yarn & staple)
261 Fifth Ave., New York 16, N. Y.
Plants: Childersburg, Ala.
Elizabethton, Tenn.

Celanese Corp. of America (rayon & acetate yarn, staple & tow)
180 Madison Ave., New York 16, N. Y.
Plants: Rome, Ga.
Cumberland (Amcelle), Md.
Rock Hill (Celriver), S. C.
Narrows (Celco), Va.

Courtaulds (Alabama) Inc. (rayon staple)
600 Fifth Ave., New York 20, N. Y.
Plant: LeMoyne, Mobile County, Ala.

E. I. du Pont de Nemours & Co., Inc. (rayon & acetate yarn)
Wilmington 98, Del.
Plants: Old Hickory, Tenn.
Richmond (Ampthill), Va.
Waynesboro, Va.

Fair Haven Mills, Inc. (rayon horsehair & straw)
Plant: Fair Haven, Vt.

Greenville Mills, Inc. (Mississippi), Delaware Rayon Div., subsidiary of Mohasco (rayon staple)
P. O. Box 908, New Bedford, Mass.
Plant: New Castle, Del.

Hartford Rayon Co., Div. of Bigelow-Sanford Carpet Co., Inc. (rayon staple)
140 Madison Ave., New York 16, N. Y.
Plant: Rocky Hill, Conn.

Industrial Rayon Corp. (rayon yarn)
Union Commerce Bldg., Cleveland 1, O.
Plants: Cleveland, O.
Painesville, O.
Covington, Va.

Mohasco Industries, Inc., New Bedford Rayon Div. (rayon yarn)
P. O. Box 908, New Bedford, Mass.
Plant: New Bedford, Mass.

North American Rayon Corp., Subsidiary of Beaunit Mills, Inc. (rayon yarn)
261 Fifth Ave., New York 16, N. Y.
Plant: Elizabethton, Tenn.

Skenandoa Rayon Corp., subsidiary of Beaunit Mill, Inc. (rayon yarn)
261 Fifth Ave, New York 16, N. Y.
Plant: Utica, N. Y.

Tennessee Eastman Co., Div. of Eastman Kodak Co. (acetate yarn, staple & tow)
Kingsport, Tenn.
Plant: Kingsport, Tenn.

U.S.A. Non-Cellulosic Fiber Producers:

ACRYLIC FIBER (Plants):
American Cyanamid Co., Stamford, Conn. (pilot plant); Pensacola, Fla. (under construction)
Carbide and Carbon Chemicals Co., South Charleston, W. Va.
Chemstrand Corp. (owned by American Viscose and Monsanto Chemical), Decatur, Ala.
E. I. du Pont de Nemours & Co., Camden, S. C.
Tennessee Eastman Co., division of Eastman Kodak Co., Kingsport, Tenn.

DINITRILE FIBER (Plants):
B. F. Goodrich Chemical Co., Avon Lake, O. (pilot plant)

"NITRILE ALLOY" FIBER (Plants):
Dow Chemical Co., Textile Fibers Dept., Pittsburg, Calif. (pilot plant); Lee Hall, Va. (under construction)

NYLON—POLYAMIDE FIBER (Plants):
Allied Chemical & Dye Corp., National Aniline Div., Chesterfield, Va.
American Enka Corp., Enka, N. C.
Chemstrand Corp., Pensacola, Fla.
Dawbarn Brothers, Inc., Waynesboro, Va.
E. I. du Pont de Nemours & Co., Seaford, Del., Chattanooga, Tenn., Martinsville, Va.
Firestone Plastics Co., division of Firestone Tire & Rubber Co., Pottstown, Pa.
Industrial Rayon Corp., Covington, Va.
National Plastic Products Co., Odenton, Md.
North American Rayon Corp., Subsidiary of Beaunit Mills, Inc., Elizabethton, Tenn. (pilot plant)
Poliafil, Inc. (formerly A. L. Erlanger Co., Inc.), Scranton, Pa.
Polymers, Inc., Middlebury, Vt.

POLYESTER FIBER (Plant):
E. I. du Pont de Nemours & Co., Kingston, N. C.

POLYETHYLENE FIBER (Plants):
Bolta Products, division of General Tire & Rubber Co., Lawrence, Mass.
Dawbarn Brothers, Inc., Waynesboro, Va.
Firestone Plastics Co., division of Firestone Tire & Rubber Co., Pottstown, Pa.
National Plastic Products Co., Odenton, Md.
Reeves Brothers, Inc., Spartanburg, S. C.

POLYSTRYRENE FIBER (Plants):
Dawbarn Brothers, Inc., Waynesboro, Va.
Polymers, Inc., Middlebury, Vt.

POLYVINYL ACETATE FIBER (Plant):
American Viscose Corp., Meadville, Pa.

PROTEIN FIBER (Plant):
Virginia-Carolina Chemical Corp., Taftville, Conn.

SARAN (Polyvinylidene chloride fiber) (Plants):
Saran as a raw material is made by Plastics Dept. of Dow Chemical Co., Midland, Mich. This company currently licenses following companies to extrude saran yarns, monofilaments, staple, and/or tow for textile purposes:
Bolta Products, Div. of General Tire & Rubber Co., Lawrence, Mass.
Dawbarn Brothers, Inc., Waynesboro, Va.
Firestone Plastics Co., Div. of Firestone Tire, Pottstown, Pa.
National Plastic Products Co., Odenton, Md.
Oriented Plastics, Inc. Pembroke, N. H.
Saran Yarns Co. (Owned by Dow Chemical and National Plastic Products), Odenton, Md.
Southern Lus-Trus Corp., Jacksonville, Fla.

TETRAFLUOROETHYLENE FIBER (Plant):
E. I. du Pont de Nemours & Co., Inc., Richmond, Va.

TEXTILE GLASS FIBER (Plants):
Ferro Corp., Fiber Glass Div., Nashville, Tenn.
L-O-F Glass Fibers Co., Burbank, Cal., Defiance & Waterville, O., Parkersburg, W. Va.
Owens-Corning Fiberglas Corp., Hunt-

POWELL RIVER UNBLEACHED SULPHITE PULP

★STRENGTH

★COLOR

★CLEANLINESS

★SERVICE

★DEPENDABLE SUPPLY

★POWELL RIVER SALES COMPANY LIMITED
STANDARD BUILDING VANCOUVER, B. C.

RESTIGOUCHE
BLEACHED SULPHITE PULP

•

for the manufacture of Cellophane, Rayon and Products of Paper.

Restigouche
BLEACHED SULPHITE PULP

RESTIGOUCHE COMPANY, LTD.
Campbellton, N. B., Canada

ington, Pa., Ashton, R. I., Anderson, S. C. **Pittsburgh Plate Glass Co.**, Shelbyville, Ind.

CERAMIC FIBER (Aluminum-silicate fiber) (Plant):
Carborundum Co., Niagara Falls, N. Y.

OTHER FIBERS (Plant):
Polymers, Inc., Middlebury, Vt.

Fourth Record Year for Acetate-Rayon Production

World rayon-acetate production soared to 5.215 billion lbs. in 1956, according to Textile Organon; a record for the fourth straight year. U.S.A. production was 22% of this total, dropping from 25% in 1955.

Man-made fiber production in the U.S.A. dropped from 1,715.8 million lbs. in 1955 to 1,644.7 million lbs. in 1956. U.S.A. production of rayon and acetate in 1956 declined 9% from 1955 to reach 1,147,900,000 lbs., 11% below the all-time production record of 1,294,200,000 lbs. in 1951.

Competitors of these woodpulp products—the noncellulosic and textile glass fiber production—increased 9% to 496,800,000 lbs. above 1955. Rayon output was off 12½%; acetate yarn 16% and acetate staple 1%; but rayon staple output increased 1%.

New European Pulp Exporters

Within recent years, two Middle European countries have become significant exporters of pulp—Austria and West Germany. Statistics on these shipments are not included in the World Pulp Map, but are given below:

Austria Exports
Total: 206,845

Switzerland	18,498
United Kingdom	21
Yugoslavia	1,813
Latin America	1,075
Egypt	566
Bulgaria	1,105
France	9,631
East Germany	1,498
West Germany	66,182
Hungary	4,330
Greece	7,352
Italy	91,053
Netherlands	829
Spain	1,909

West Germany Exports
Total: 51,103

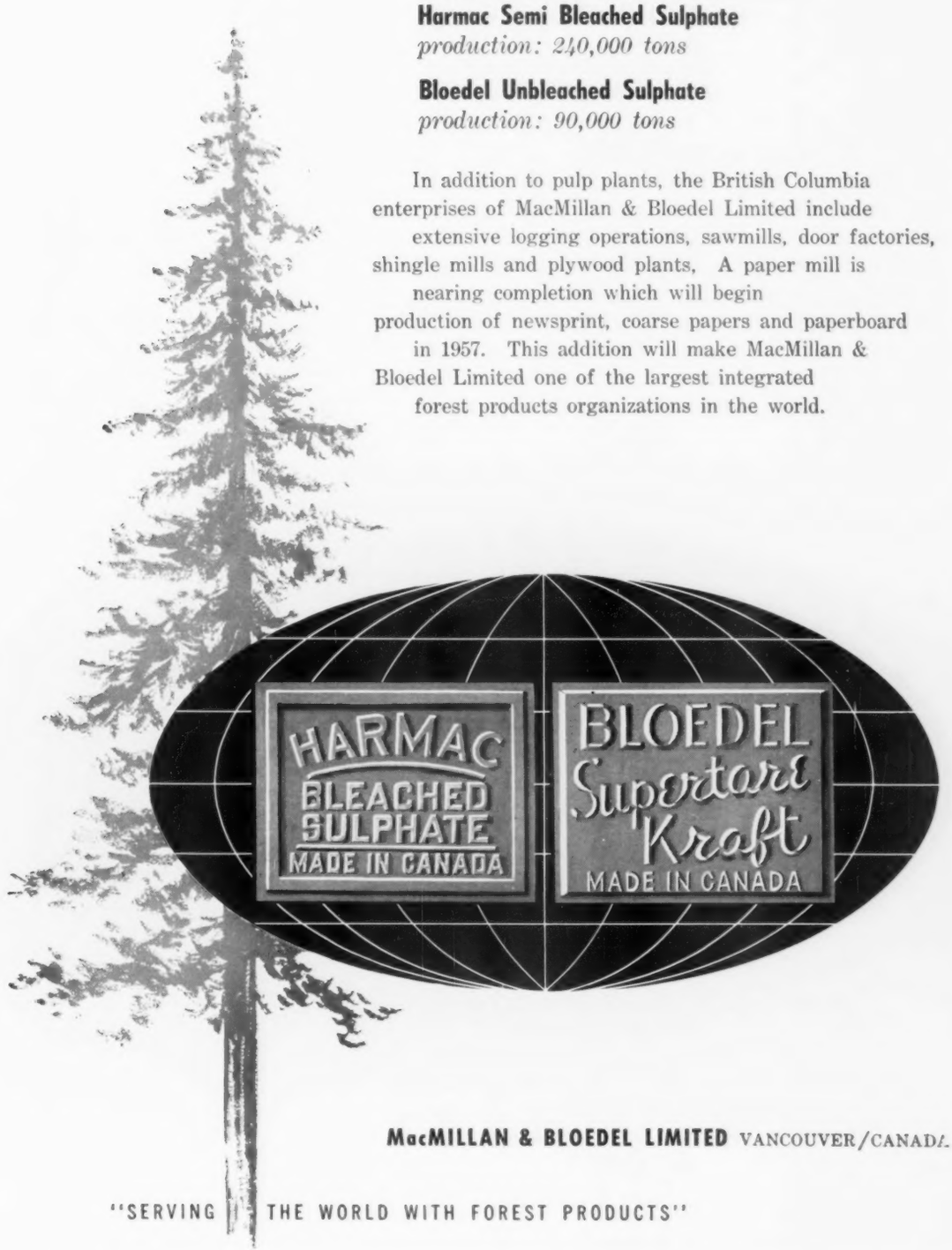
Italy	10,593
Austria	12,634
France	3,879
Belgium	5,996
Spain	2,588
United Kingdom	1,640
Netherlands	6,021

WORLD MARKETS PREFER THESE PULP BRANDS:

Harmac Bleached Sulphate and
Harmac Semi Bleached Sulphate
production: 240,000 tons

Bloedel Unbleached Sulphate
production: 90,000 tons

In addition to pulp plants, the British Columbia enterprises of MacMillan & Bloedel Limited include extensive logging operations, sawmills, door factories, shingle mills and plywood plants. A paper mill is nearing completion which will begin production of newsprint, coarse papers and paperboard in 1957. This addition will make MacMillan & Bloedel Limited one of the largest integrated forest products organizations in the world.



MacMILLAN & BLOEDEL LIMITED VANCOUVER/CANADA

"SERVING THE WORLD WITH FOREST PRODUCTS"

HOWE SOUND PULP

DIVISION OF CANADIAN FOREST PRODUCTS LTD.

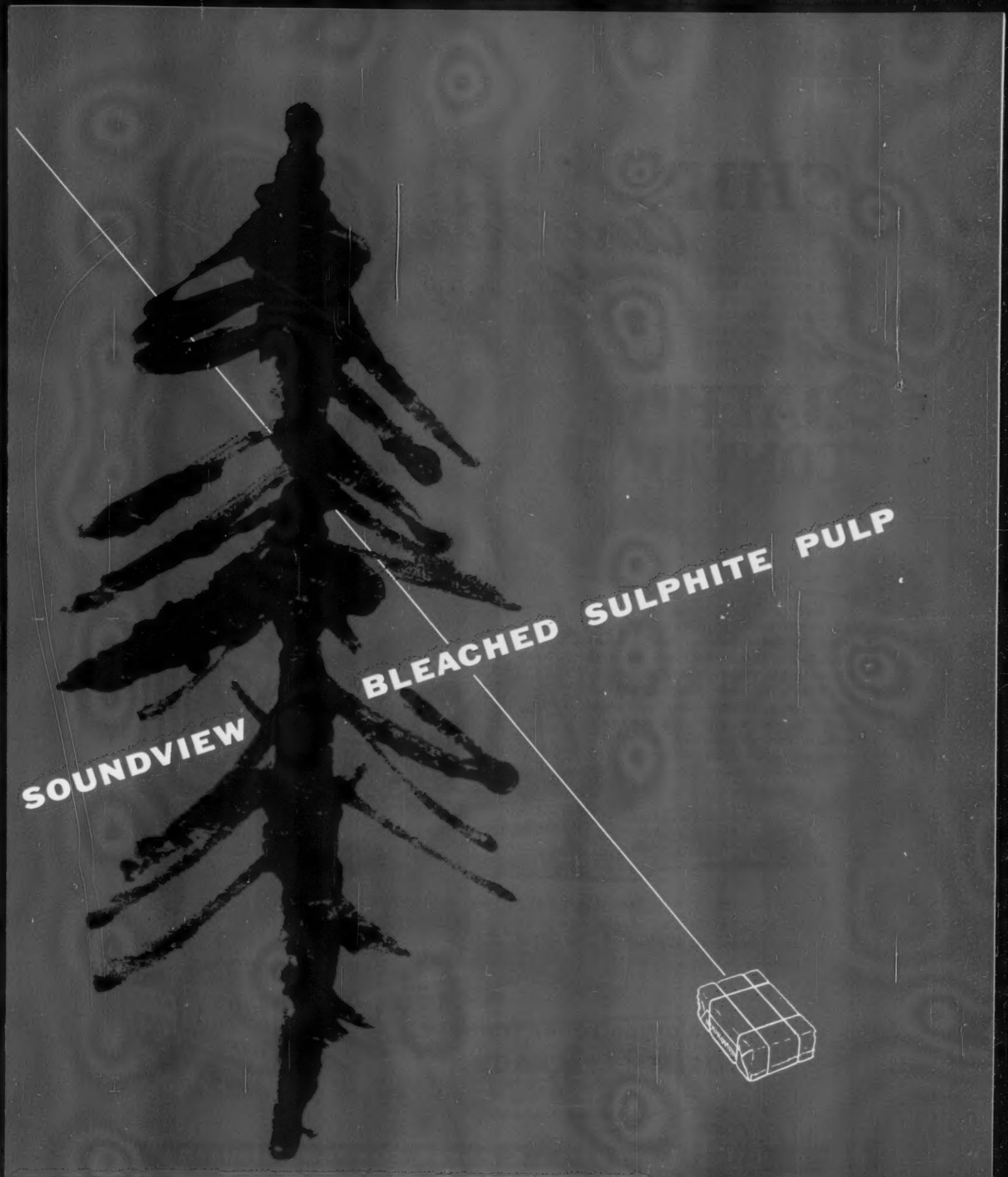
Manufacturers of Semi-Bleached and Unbleached Sulphate Pulp

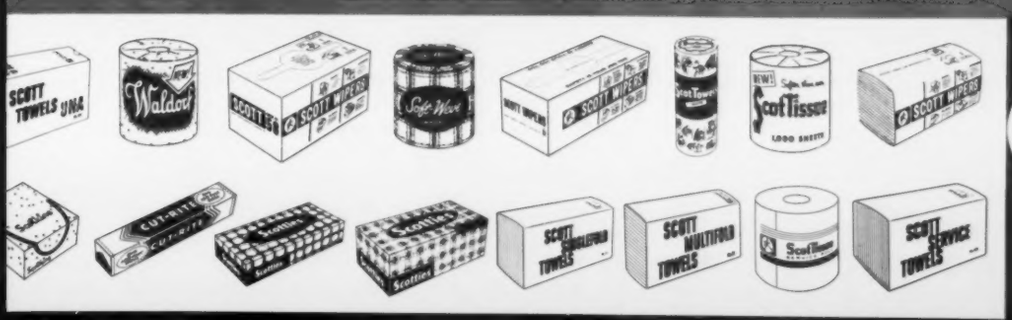
Head Office:
999 West Pender St.
Vancouver 1, B. C.

Plant and Dock:
Port Mellon,
British Columbia

HSP

Sales agents: Perkins - Goodwin Co.
589 Fifth Avenue, New York 17, N. Y.





SCOTT PAPER COMPANY

INDUSTRIAL PRODUCTS GROUP
PULP DIVISION
CHESTER, PA.

SHIP *Anything... Anywhere... in* BATHURST CONTAINERS

For shipments to the four corners of the earth—or to the four corners of your own town—Bathurst offers you a complete line of corrugated containers and wirebound boxes.

Easy to handle . . . economical . . . and laboratory tested at every stage of manufacture, Bathurst containers are famous for their strength, attractive appearance and durability.

Whatever your shipping requirements or problems may be, consult us. The services of our packaging design and engineering department are at your disposal.

One organization from FOREST to PACKAGE

FROM FOREST BATHURST TO PACKAGE

BATHURST CONTAINERS, *division of*

POWER & PAPER COMPANY LIMITED

Sales Offices: Montreal, Toronto, Hamilton.
Container Plants, Corrugated Products: St. Laurent and Montreal, Que., and Toronto, Hamilton, Whitby, Ont.
Container Plants, Wood Products: Montreal, Que., and Toronto, Ont.
Pulp and Paperboard Mills: Bathurst, N. B.

56-1

At Oriskany, we start *right* with the *right felt design.* Our technical personnel, our designers, our chemists—all these specialists combine their talents to develop the felt that's best for your particular operation.

On every type of paper machine . . .

Better paper products start with correct FELT design!

Whether you are running the finest tissue or the heaviest board, you'll get more uniform production when the felt you use is *specifically designed* for your machine and the type of paper product you are making. At Oriskany, your particular requirements are analyzed by our production staff, and your felt is designed with the proper characteristics for finish and drainage and fiber strength to produce the best results on your machine operation. We can also treat the felt with our exclusive chemical formulas to combat unusual conditions.

Do you have a special felt problem? Talk to the competent Oriskany Sales Engineer when he calls at your mill. He can offer you sound, helpful advice, and he can suggest a design improvement or one of our many chemical treatments to correct your specific felt problem.

First choice—because they last

Oriskany

WATERBURY FELTS

H. WATERBURY and SONS COMPANY • ORISKANY, NEW YORK

Simplest pneumatic controller to use and maintain

Bristol gives you improved stability of control action –but keeps basic simplicity of Series 500 Controllers

Bristol Series 500 Pneumatic Controllers are the easiest controllers on the market to use and maintain–still the most dependable and trouble-free.

The reason? The basic simplicity of the operating mechanism. *That* hasn't changed in the years since we introduced this long-time favorite among instrument men. Reason No. 2: they are equipped with famous Bristol measuring elements.

Easy calibration

It's this foolproof simplicity of the control system that makes calibration so easy on Series 500 controllers. *Only one* service adjustment is required and provided to exactly calibrate the control system. The control system can be completely disassembled and after reassembly (even with replacement of parts) can be restored to precise calibration with this *one* adjustment.

No special tools are required. A ¼-inch wrench is all that's needed.

The 500's completely interchangeable parts, accurately designed and manufactured to extremely close tolerances, make possible this built-in calibration.

And check these features:

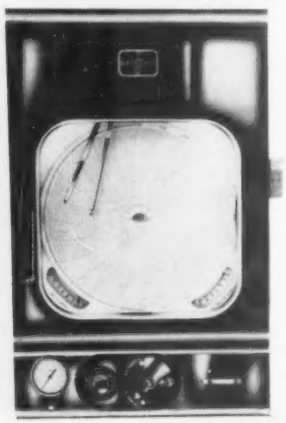
Improved control stability—advanced automatic control techniques have been applied by Bristol engineers to improve stability of control action in the new Series 500W Controllers.

Wide-band models offer choice of ½ to 400% proportional band with simple band shift.

True zero derivative setting—exclusive with Bristol.

Reset action stops in reset models—again a Bristol exclusive—prevent loss of control due to prolonged deviation from set point.

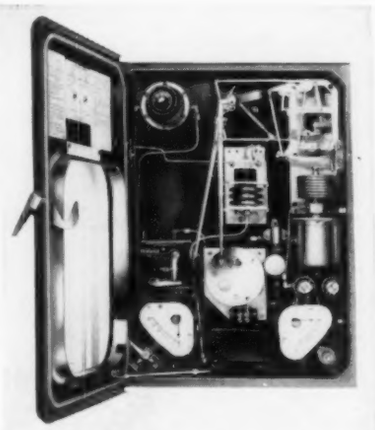
Four-position internal transfer station with automatic, manual, test, and service positions, plus pressure-matching button and manual pressure regulator, for maximum convenience in process control.



BRISTOL'S® SERIES 500 CONTROLLER, shown here with four-position transfer station. Internal station also available.

Complete data available

Write today for engineering data on Bristol's Series 500 controllers for your critical control problems. They're available for *automatic control of temperature, pressure, vacuum, draft, absolute pressure, liquid level, humidity, pH value, electrical measurements, and mechanical motion.* The Bristol Company, 142 Bristol Road, Waterbury 20, Conn.



FOUR-POSITION INTERNAL TRANSFER STATION shown here in interior view of Series 500 Controller. Permits remote manual control, testing and servicing without disconnecting instrument.

YOU CAN GET THESE CONTROL MODES:

1. **Fixed narrow band** (on-off)
2. **Proportional band**—½ to 100% and ½ to 30%.
3. **Reset with wide band**—rates 0.1 to 10 or 1 to 300 repeats per minute. Proportional band ½ to 400%.
4. **Derivative (rate)**—½ to 100% proportional band. Derivative time 0.2 to 20 min., plus zero derivative setting.
5. **Reset plus derivative**—proportional band and reset rate as in "reset" above. Derivative time as in "derivative" above.

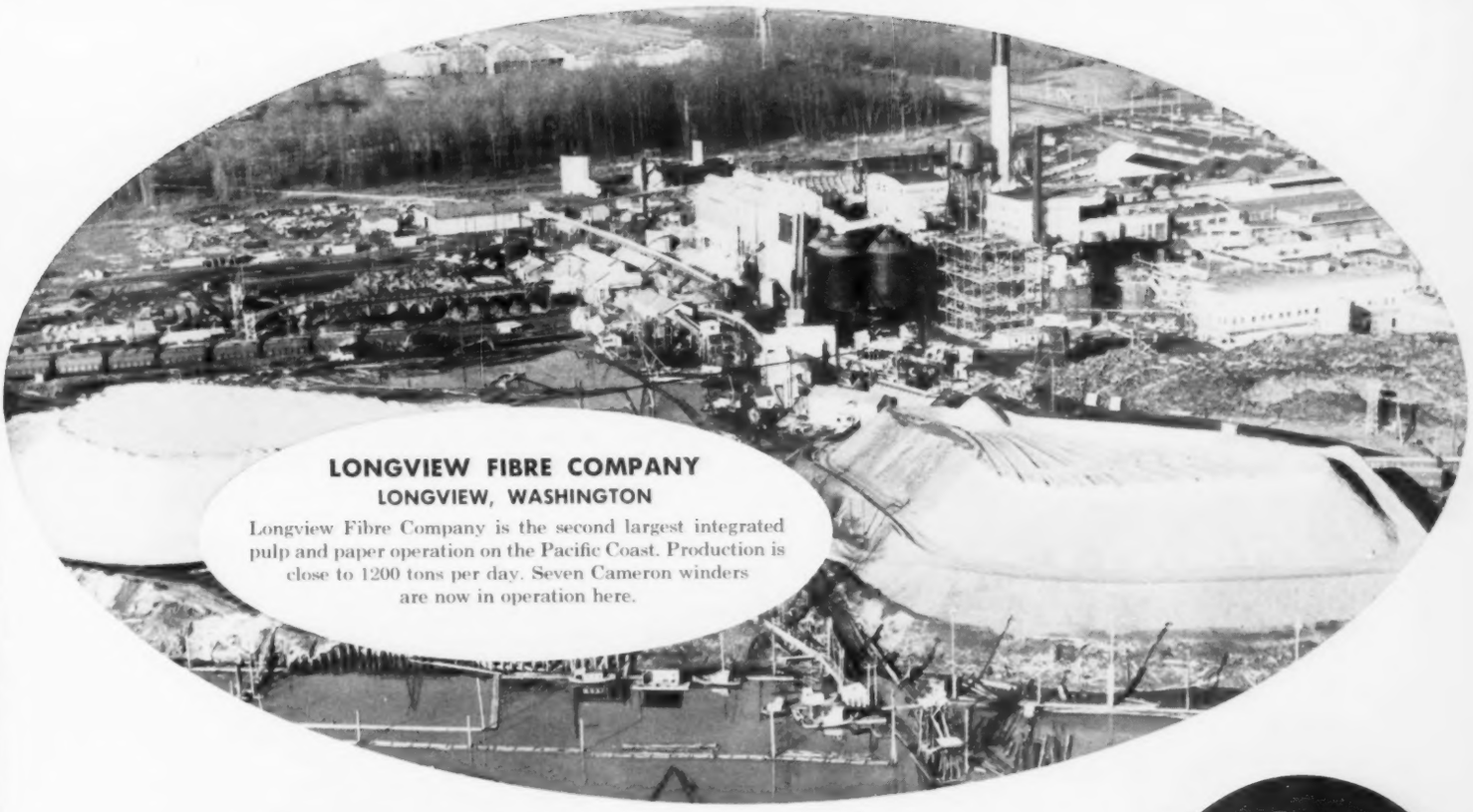
YOU CAN HANDLE THESE CONTROL PROBLEMS:

1. Cascaded control 2. Selective control 3. Ratio control 4. Time-program control 5. Pneumatic transmission.

6.55

BRISTOL *TRAIL-BLAZERS IN PROCESS AUTOMATION*

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS



LONGVIEW FIBRE COMPANY
LONGVIEW, WASHINGTON

Longview Fibre Company is the second largest integrated pulp and paper operation on the Pacific Coast. Production is close to 1200 tons per day. Seven Cameron winders are now in operation here.

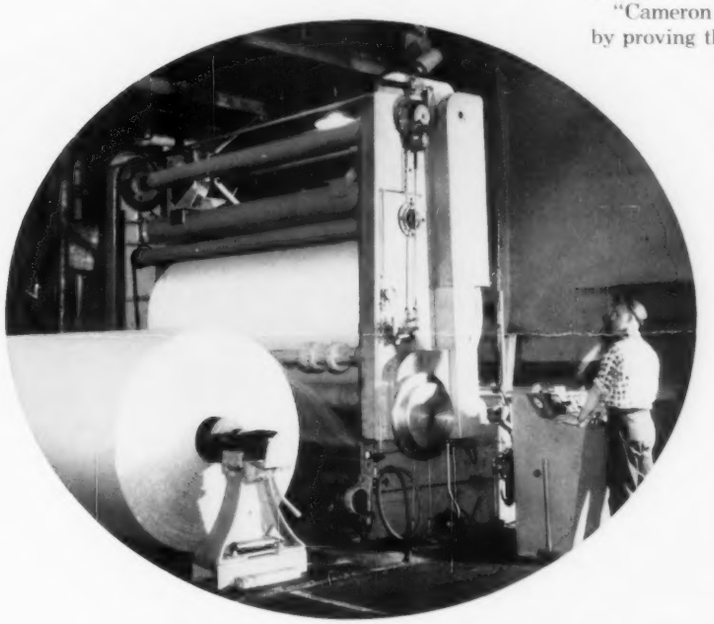
"CAMERON 468 improved the quality of our board rolls" —*says Rex L. West, Assistant Paper Mill Superintendent*

"The outstanding advantage of our new Cameron 468 Winder is its ability to make a good roll. Our 468 is rated at speeds which provide ample reserve for anticipated future expansion. However, speed is a secondary consideration. Of first importance to us is the quality of the rolls.

"The Cameron 468 serves our No. 4 machine directly, winding medium weight board for corrugating. Poor quality rolls were hampering production in our corrugating department. With the Cameron 468 we get tight, uniformly wound, straight-sided rolls that feed perfectly, saving time, trouble and money in the corrugating operation.

"Cameron winders have earned our respect by proving their ability to meet our demands."

Rex L. West



AT LONGVIEW a Cameron 468 high speed mill type winder serves the No. 4 machine on medium weight board. For ease of operation and to maintain constant, uniform roll quality, all hydraulic and electric controls are located in the panel board of the operator's control station.

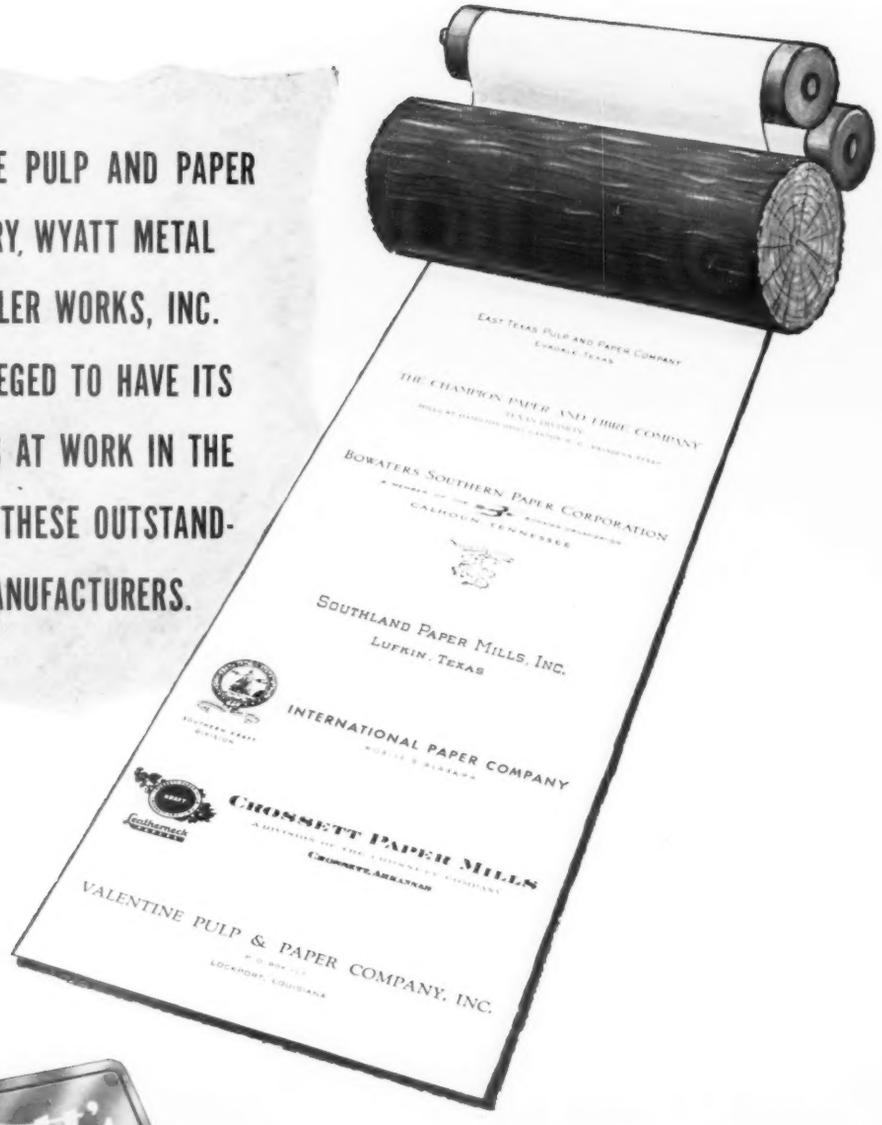
Roll quality is of major importance wherever paper is made. Rolls produced on Cameron winders are uniformly wound to the precise required degree of *hardness* or *softness*. Straight sides, clean-cut edges and uniform density mean smoother feeding in subsequent operations. You'll save money and please your customers with Cameron-made rolls. At the same time, you'll find Cameron's reserve capacity a sound investment for future expansion. You are invited to consult with our technical staff on any slitting or roll winding problem.

Cameron Machine Company • 61 Poplar St., Brooklyn 1, N. Y.

BUILT BY CAMERON'S team of specialists

AA-333

WITHIN THE PULP AND PAPER INDUSTRY, WYATT METAL AND BOILER WORKS, INC. IS PRIVILEGED TO HAVE ITS PRODUCTS AT WORK IN THE MILLS OF THESE OUTSTANDING MANUFACTURERS.


EAST TEXAS PULP AND PAPER COMPANY
THE CHAMPION PAPER AND FIBRE COMPANY
BOWATERS SOUTHERN PAPER CORPORATION
CALHOUN, TENNESSEE
SOUTHLAND PAPER MILLS, INC.
LUFKIN, TEXAS
INTERNATIONAL PAPER COMPANY
CROSSETT PAPER MILLS
VALENTINE PULP & PAPER COMPANY, INC.

Wyatt's
HOUSTON-DALLAS-NEW YORK-TULSA

It is No Closed Roll. Wyatt's Ambition is to Keep this List Growing Until it Includes Every Name in the Vital Paper Industry.

WYATT METAL & BOILER WORKS, INC.

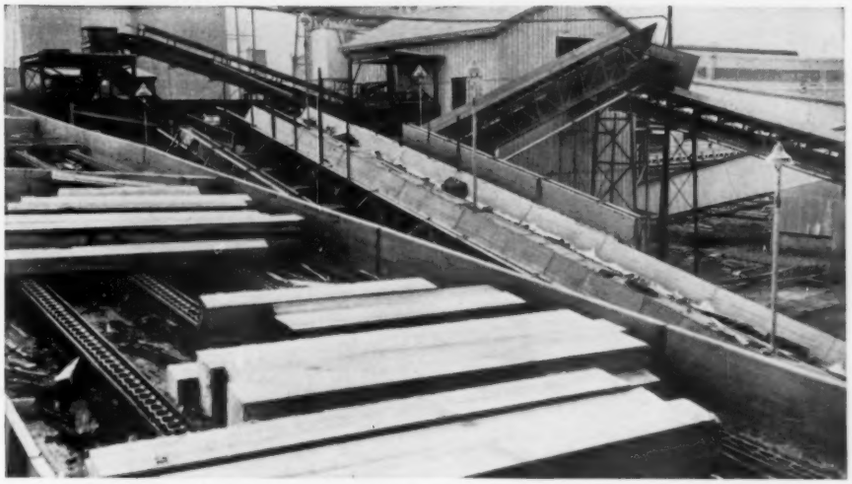
DALLAS • HOUSTON

Wholly owned Subsidiary
Wyatt's PLASTICS, INC.
Plastics for all Industrial Uses

Its Subsidiary, Wyatt's Plastics, Inc., is Ambitious to have the Same Names on its Roll of Customers.

MANUFACTURERS AND ERECTORS SINCE 1913

Promal chain specified to resist heavy loads and abrasive wear



LONGER SERVICE, LOWER CONVEYING COSTS are achieved through the use of Link-Belt Promal Class H pintle chain. Longer-wearing Promal prevents distortion of links under severe impact.

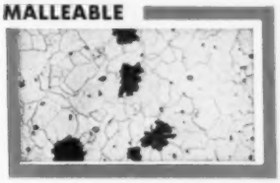
Specially heat-treated malleable iron provides extra wear resistance

Fewer conveyor shutdowns and minimized replacements are economies realized by users of Link-Belt Promal chain. Its greater strength absorbs continuous impact loads — and wear resistance supplies the durability to cope with severe abrasion.

Promal is more than a partially annealed or surface-hardened malleable iron. Developed by Link-Belt, this specially heat-treated malleable iron is actually transformed into a metal of radically different physical properties. Promal, because of uniform micro-structure throughout its whole section, provides greater ultimate strength, higher yield point, exceptional fatigue resistance and a remarkable capacity to withstand abrasive conditions.

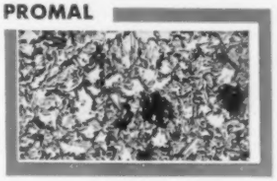
For unusually abrasive or mild corrosive conditions, Promal chain can be furnished with "file-hard" surfaces. Copper bearing or special alloy content also available.

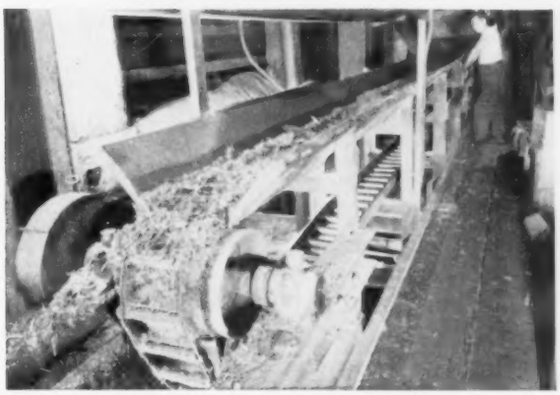
MALLEABLE



MICROPHOTOS show difference between ordinary malleable iron and Promal. Left—white areas in malleable microphoto represent "free iron" . . . black shows soft nodules of carbon. Right—dark areas in Promal structure show stronger, stiffer reinforcing material which strengthens metal; resists distortion, wear.

PROMAL





How, where to apply Promal in the pulp and paper industry

Choose Link-Belt Promal chains for highly abrasive conditions—for extra strength and wear resistance demanded by heavy loads or long, sliding conveyors. They last much longer . . . cost but a little more.

The wide range of Link-Belt chains available in Promal includes all types of cast and combination chains.

Special hardening available for highly abrasive conditions

Specially hardened Link-Belt chains and attachments have proved that there's no need to go to more costly cast alloy steel chains for highly abrasive service. See your Link-Belt representative or authorized distributor for specific details.

H-Class combination drag chain has extra wear surfaces

H-Class combination drag chain for refuse conveyors can be turned over to double service life. Sides and barrels of links are cast integral to resist distortion. Rounded side of barrel offers proper sprocket contact, while the other forms a vertical pushing surface. Accurately machined pitch holes in steel sidebars assure tight press fit. Chain is available in four sizes.

14,254

HEADQUARTERS for chains, sprockets and other Link-Belt conveying and mechanical power transmission products is your nearby Link-Belt factory branch store or authorized stock-carrying distributor.

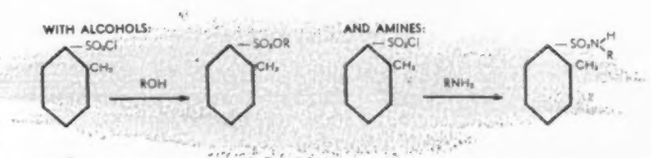
LINK-BELT

CHAINS AND SPROCKETS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 15); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

o-TOLUENESULFONYL CHLORIDE*

TYPICAL REACTIONS . . .



Industry has a new working tool in o-Toluenesulfonyl Chloride. This 98% pure ortho isomer can be used in building molecules for use in a wide variety of new products, from dyestuffs to pharmaceuticals; from plasticizers to herbicides. It is even possible that it is now being used in products you are making or have recently acquired.

From the chemical name of o-Toluenesulfonyl Chloride it is obvious that sulphur is a component of this compound . . . added evidence of the important role Sulphur plays in our industrial economy.

Product of Monsanto Chemical Company

Texas Gulf Sulphur Co.

75 East 45th Street, New York 17, N.Y.
811 Rusk Avenue, Houston 2, Texas

Sulphur Producing Units
- Newgulf, Texas
- Moss Bluff, Texas
- Spindletop, Texas
- Worland, Wyoming

Autopsy for a Short-Lived Felt

That liquid being "eye-dropped" on a sheet of paper was once the wool fiber of a papermaker's felt. Changed by the miracle of modern chemistry into a solution of "solubilized wool," it is about to be tested by *paper chromatography*—a *new*, Huyck-discovered technique for detecting chemical damage in paper machine clothing.

This *newest* of Huyck's "practical aids" for papermakers enables Huyck technicians to determine quickly and accurately whether felt deterioration is the result of attack by chemicals unfriendly to felts.

With this broad knowledge of typical felt deteriorating factors, Huyck applies more advantageously the *new* chemical treatments and synthetic fibers which toughen felts against chemical damage. *The result: better production at lower felt cost per ton!*

F. C. Huyck & Sons,
Rensselaer, N. Y.; Aliceville, Ala.;
Peterborough, N. H.; Cavendish, Vt.;
In Canada: Kenwood Mills Ltd.,
Arnprior, Ontario.

NEW!
HUYCK FELTS ★ INDUSTRIAL FABRICS
FIRST IN QUALITY • FIRST IN SERVICE SINCE 1870

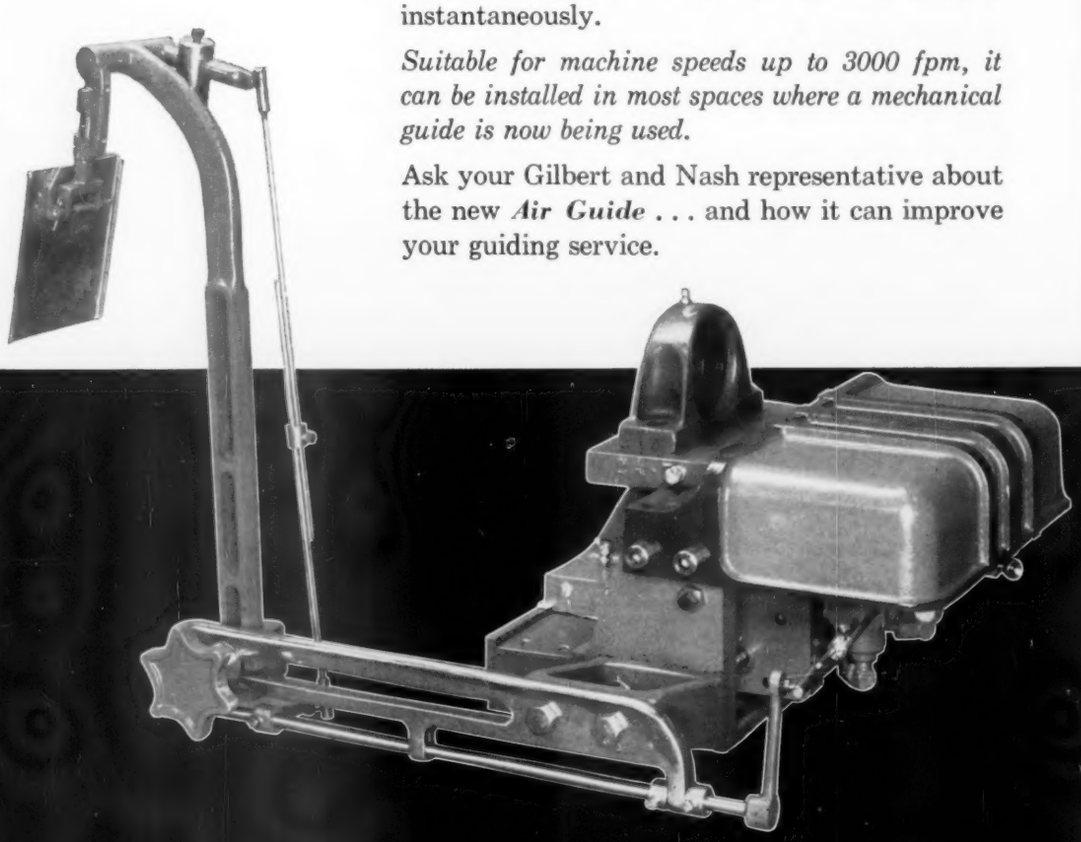
NEW AIR GUIDE FROM GILBERT AND NASH

Here's a new guiding service from Gilbert and Nash . . . an efficient, economical completely air-operated guide! Simple, too—a minimum of mechanical moving parts.

The new Gilbert and Nash ***Air Guide*** has a constant rate of correction, regardless of the machine speed. And when correction is needed, there's no lag! The ***Air Guide*** reacts instantaneously.

Suitable for machine speeds up to 3000 fpm, it can be installed in most spaces where a mechanical guide is now being used.

Ask your Gilbert and Nash representative about the new ***Air Guide*** . . . and how it can improve your guiding service.



GILBERT and NASH company

APPLETON, WISCONSIN

CHEMICAL USERS' GUIDE To General Chemical Products for the Paper Industry.

PRODUCT	AVAILABLE FORMS	COMMERCIAL STRENGTH (MIN.)	SHIPPING CONTAINERS	APPLICATIONS
Aluminum Sulfate $Al_2(SO_4)_3 \cdot 14H_2O$ approx. *(Alum)*	Commercial & Iron Free: Lump, Ground Powdered	17.25% Al_2O_3	Bags Bulk Carloads	Precipitation of rosin size and filler; water clarification; manufacture of satin white; pitch control; mordant for dyes.
Aluminum Sulfate $Al_2(SO_4)_3$ + water *(Liquid Alum)*	Liquid	32° Be (total Al_2O_3 7.2%)	Tank Trucks Tank Cars	Same as commercial dry product but lower strength.
Salt Cake Na_2SO_4	White or Grayish Granules	95-99% Na_2SO_4	Bags Bulk Carloads	Used in kraft cooking liquors as the source of Na_2S.
Glauber's Salt, Crystal $Na_2SO_4 \cdot 10H_2O$ *(Sodium Sulfate)*	Colorless Crystals	96% $Na_2SO_4 \cdot 10H_2O$ (42.3% Na_2SO_4)	Bags Barrels Fibre Drums	Substitute for salt cake in kraft cooking liquor.
Glauber's Salt, Anhydrous Na_2SO_4 *(Sodium Sulfate)*	White Granules	99.9% Na_2SO_4	Bags Bulk Carloads	Same as Crystal but stronger product.
Sulfuric Acid H_2SO_4	Liquid	66° (93.19%), 99% 20% oleum and higher strengths	Carboys Steel Drums Tank Trucks Tank Cars	Wire souring; parchmentizing; acid wash in last stage of multi-stage pulp bleaching; neutralizing tall oil soaps; pH adjusting.
Hydrochloric Acid HCl + water *(Muriatic Acid)*	Liquid	18° Be (27.92%) 20° Be (31.45%) 22° Be (35.21%)	Carboys Tank Trucks Tank Cars	Wet strength paper.
Sodium Bisulfite, Anhydrous $Na_2S_2O_5$ *(ABS) (Sodium Metabisulfite)*	Powder	97.5% $Na_2S_2O_5$ (Equiv. 65.5% SO_2)	Bags Fibre Drums	Anti-chlor.
Sodium Silicate $Na_2O \cdot XSiO_2$ + water *(Water Glass)*	Liquid	38°, 41°, 42° Be; special and higher strengths	Steel Drums Tank Cars Tank Trucks	Adhesive for corrugated and solid fibre board; used in coating mixtures to reduce viscosity and in beater sizing to stiffen paper. Aid in bleaching & flocculation.
Chromium Potassium Sulfate $K_2SO_4 \cdot Cr_2(SO_4)_3 \cdot 24H_2O$ *(Potash Chrome Alum)*	Red Violet Crystals	99.5% $K_2SO_4 \cdot Cr_2(SO_4)_3 \cdot 24H_2O$	Fibre Drums	Used in "save-all" or white water systems.
Aqua Ammonia NH_4OH + water *(Ammonia)*	Colorless Liquid	26° Be (29.4% NH_3)	Carboys Steel Drums Tank Trucks	Used with chlorine to form chloramines for slime control.
Sodium Fluoride	Powder	95% NaF 97% NaF	Multiwall Paper Bags Fibre Drums	Preservative and stabilizer for starch in coating mixtures.
Tetrasodium Pyrophosphate, Anhydrous $Na_4P_2O_7$ *(TSPP) (Pyro)*	White Powder	98% $Na_4P_2O_7$ (Equiv. 52% P_2O_5)	Bags Fibre Drums	Felt washing; pitch dispersion; coating.
Sodium Tripolyphosphate $Na_5P_3O_{10}$ *(Tripoly)*	White Powder	90-95% $Na_5P_3O_{10}$ (Total P_2O_5—56%)	Bags Bulk Carloads	Felt washing; pitch dispersion; coating.
Nitric Acid HNO_3 + water	Liquid	42° Be 67.2% HNO_3	Carboys Drums Tank Trucks	Nitrating pulp; cleaning monel metal.

The products advertised are commercial chemicals having various uses, some of which may be covered by patents, and the user must accept full responsibility for compliance therewith.

OTHER PRODUCTS: Sodium Sulfite; Sodium Thiosulfate; Sodium Metasilicate; Trisodium Phosphate; Copper Sulphate; Disodium Phosphate.

FOR THE LABORATORY OR SPECIAL APPLICATIONS: BAKER & ADAMSON REAGENTS and FINE CHEMICALS

GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.

Offices: Albany • Atlanta • Baltimore • Birmingham • Boston • Bridgeport • Buffalo • Charlotte • Chicago Cleveland • Denver • Detroit • Greenville (Miss.) • Houston • Jacksonville • Kalamazoo • Los Angeles Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh • Providence • San Francisco • Seattle St. Louis • Yakima (Wash.)

In Canada: The Nichols Chemical Company, Ltd. • Montreal • Toronto • Vancouver

new small instruments in fiber glass cases
indicate . . . transmit . . . control temperature or pressure

NOW . . . instruments as corrosion-resistant as the equipment they control! Every instrument in Fischer & Porter's new 1450 Series is housed in a fiber glass reinforced polyester case resistant to acids, alkalis, salts, solvents, dust, and weather. You can place indicators, transmitters, and controllers wherever you want—inside or out—without regard for corrosive fume and splash. The protection is built right into the housing . . . nothing to wear away or scratch off . . . no coatings to renew. The first such equipment available for process instrumentation, Series 1450 brings a new flexibility and freedom to instrument installation.

There's no way for corrosive atmospheres to reach the working instrument. Every exposed part is either plastic or 316 stainless steel. And a polyvinyl chloride gasket provides a positive seal against dust and moisture entry.

F&P has engineered the unique new 1450 Series housing for operation and maintenance ease. The entire instrument can be removed from the case if desired. Zero adjustment and range changes are easy. A plug in the removable door provides access to the adjustment screw for the optional external set point.

Field tested over a one year period, the 1450 Series is available NOW on four week delivery schedules.

SERIES 1450

CORROSION-PROOF INSTRUMENTS

Temperature Range:

minus 400F to plus 1000F.

Pressure Range:

30″ Hg vacuum to 5000 psi
As pneumatic receivers, 1450 instruments accommodate 3 to 15, 3 to 18, or 3 to 27 psi signals.

Instrument Options:

Single indicator • dual indicators • single indicator with dual alarms • indicating controller with any mode of control • indicating transmitter. Transmitter can provide pneumatic outputs, resistance outputs, or differential transformer outputs.

Controller Options:

- universal controller with on-off, proportional, differential gap, and manual reset
- wide band proportional
- wide band proportional plus automatic reset
- wide band proportional plus automatic reset plus derivative

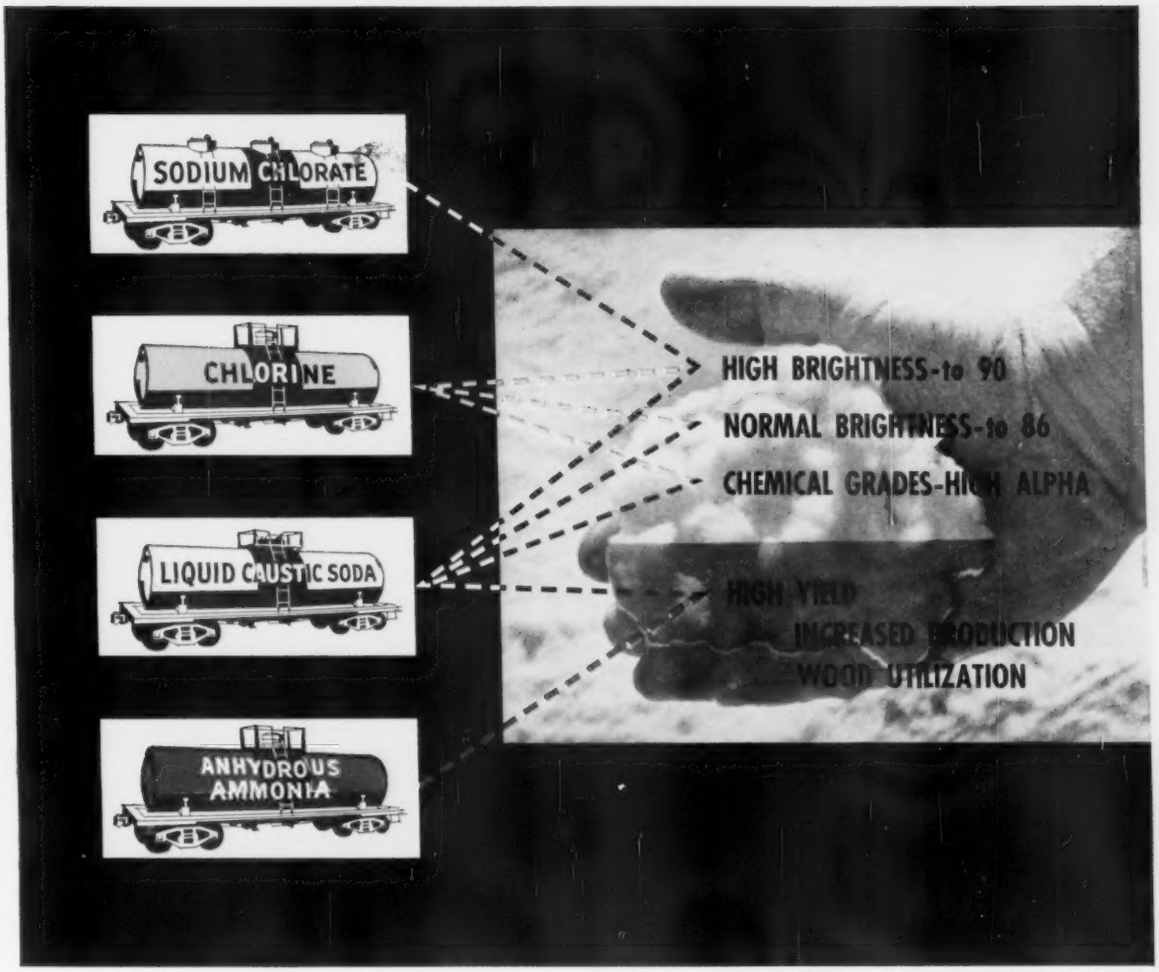
Mounting:

Suitable for surface, pipe, or panel mounting. Panel cutout size is 8¾″ x 10¼″.

For complete data write Fischer & Porter Co., 2177 County Line Road, Hatboro, Penna.

FISCHER & PORTER CO.

Complete Process Instrumentation



Partners in Pulp and Paper

Nearby PENNSALT Plants mean . . .

Economy in Transportation

Dependable Supply

Prompt Delivery

Reduction of Inventory Requirements

PENNSALT PLUS VALUES. Two PENNSALT plants in the Pacific Northwest not only provide quality controlled basic chemicals to the pulp and paper industries and to many other users, but also make available Technical Service. PENNSALT experienced engineers provide an *extra service* in assisting engineering of new plants and constant consultation on operational problems. Put a PENNSALT Technical Engineer on your staff, "but not on your payroll". Write for technical bulletins.

PENNSALT OF WASHINGTON DIVISION

PENNSALT CHEMICALS CORPORATION

(Formerly Pennsylvania Salt Manufacturing Company of Washington)

TACOMA, WASHINGTON

OFFICES AND TELEPHONES

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PORTLAND, CApitol 8-7655
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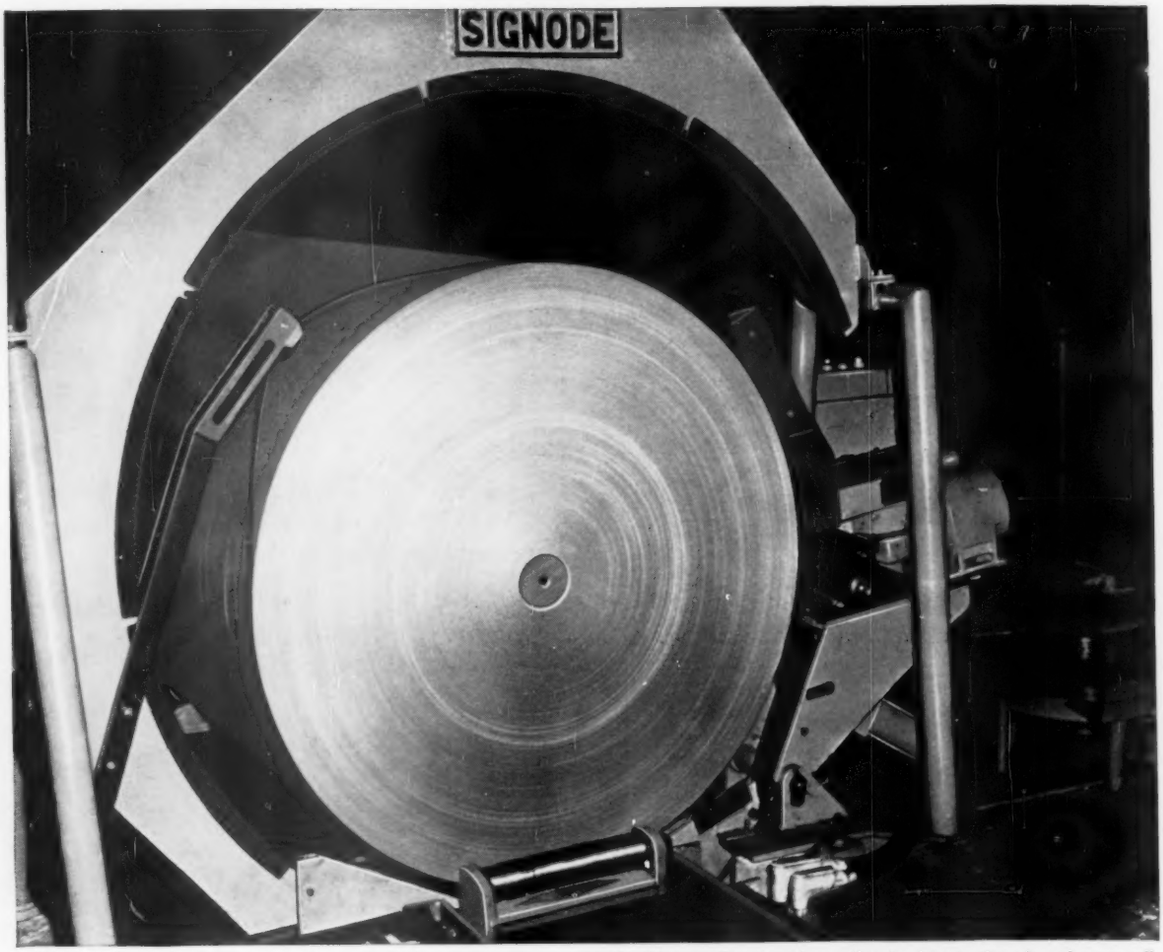
Pennsalt Chemicals

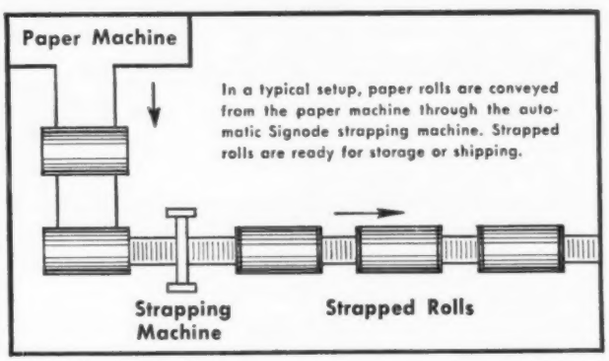


Machine applies strapping uniformly close to the edge of every roll.

Now! Automatic roll-end binding!

This new Signode roll-end binding machine is automatically controlled and operated. The strapping is straight, close to the edge, and uniformly tight and secure on every roll. The machine handles rolls from 32 inches to 60 inches in diameter and of any width —straps them more than fast enough for the largest of finishing room operations . . . automatically and dependably positions, tensions, seals, and cuts off the strap as the rolls are conveyed through it. There's nothing else like it!

These machines are now in operation in modern paper mills. For information on this important new development in the paper industry, call the Signode man near you, or write:


Paper Machine
In a typical setup, paper rolls are conveyed from the paper machine through the automatic Signode strapping machine. Strapped rolls are ready for storage or shipping.
Strapping Machine
Strapped Rolls

SIGNODE STEEL STRAPPING CO.

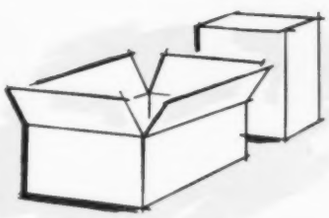
2672 N. Western Avenue, Chicago 47, Illinois

Offices Coast to Coast. Foreign Subsidiaries and Distributors World-Wide.
In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto

Now used regularly in more than 50 U. S. and Canadian mills... this "work-horse" of slime control...

BUSAN 331

new... proved



Busan 331 is a new approach to slime control. Employing an entirely different group of compounds, its effectiveness has been demonstrated in mills producing all types of papers and paperboard.

EASY TO APPLY—Liquid Busan 331 is fed directly from the drum into the system.

NOT HIGHLY TOXIC—Safe Busan 331 has a low order of toxicity to warm-blooded animals.

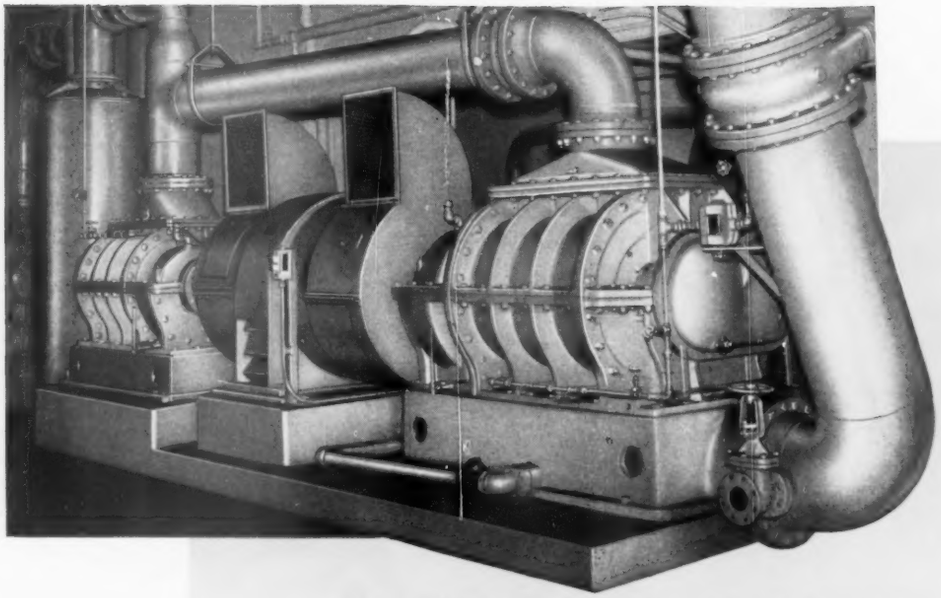
NOT ABSORBED—Tested Busan 331 does its job in the water. No evidence of retention in the paper.

BUCKMAN
LABORATORIES, INC.

INDUSTRIAL MICROORGANISM CONTROL SPECIALISTS

Manufacturing Chemists • Memphis 8, Tenn.

REPRESENTATIVES IN MOST COUNTRIES



For the world's largest Yankee tissue machine...

R-C Vacuum Pumps keep production rolling at 3000 fpm

At Crown Zellerbach Corporation's St. Helens mill in Oregon, the world's largest Yankee tissue machine, with a 258-inch wire, is producing 100 to 120 tons per day at a speed of 3000 fpm.

To provide the required vacuum for the pressure roll, suction wire boxes, wringer roll, suction couch, pickup and felt conditioners, there are seven Roots-Connersville vacuum pumps to supply approximately 33,000 cfm of air at 10 to 20" Hg vacuum.

Five important operating factors have proved the performance of these R-C Positive Displacement Vacuum Pumps:

- *Reduced horsepower at higher speeds* (600 rpm and up) creates power savings up to 25% and far lower first cost of motors.
- *Single-stage or two-stage units* in capacities for all requirements.
- *Proved reliability and low maintenance* with no internal contacts or excessive wear and freedom from down-time and maintenance.
- *Minimum sealing water* from 4 to 40 gpm, unaffected by water temperature.
- *Small floor space* with less expensive foundations and lower cost per cubic foot of capacity.

R-C Positive Displacement Vacuum Pumps purchased for this installation

- Two 16 x 40 single-stage pumps
- One 14 x 35 single-stage pump
- Two 20 x 40 x 20 x 16 two-stage pumps

The 14 x 35 single-stage unit is direct-connected to a special shaft extension from one of the 16 x 40 units to make a two-stage compound pump.

For evidence of how other leading industrial users benefit from these advantages, write for Bulletin 50-B-13.

ROOTS-CONNERSVILLE BLOWER

A DIVISION OF DRESSER INDUSTRIES, INC.

757 Willow Ave., Connersville, Indiana. In Canada—629 Adelaide St., W., Toronto, Ont.

Story of progress...

Dominion Engineering's part in developing Pressure Headboxes

The pressure head box is an essential component of all high-speed paper machines. The photo above shows the 1956 version of the original patented design pressure head box, as developed by Dominion in 1936.

Dominion continues to produce advanced designs in anticipation of the pulp and paper industry's demand for faster and more efficient machines.

DOMINION ENGINEERING
COMPANY LIMITED, MONTREAL

THE LARGEST GLASSINE CALENDER IN THE WORLD...

16-roll 103" face. This power-speed giant, equipped with electronic drives with finger-tip control, has proven itself great in operational performance. One of its many exclusive features is removal of one or more rolls during the same operation. All piping enclosed in the calender frames. Automatic continuous lubrication controlled from one station. An outstanding engineering achievement.

B. F. PERKINS & SON, INC.

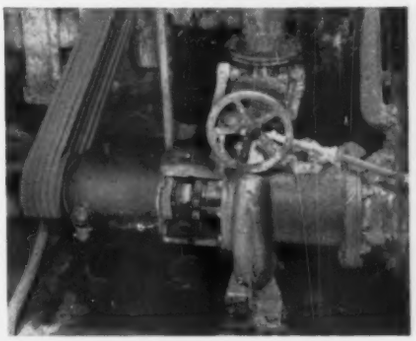
HOLYOKE • MASSACHUSETTS

Southern Sales Offices • 1609 Liberty Life Bldg. • North Carolina

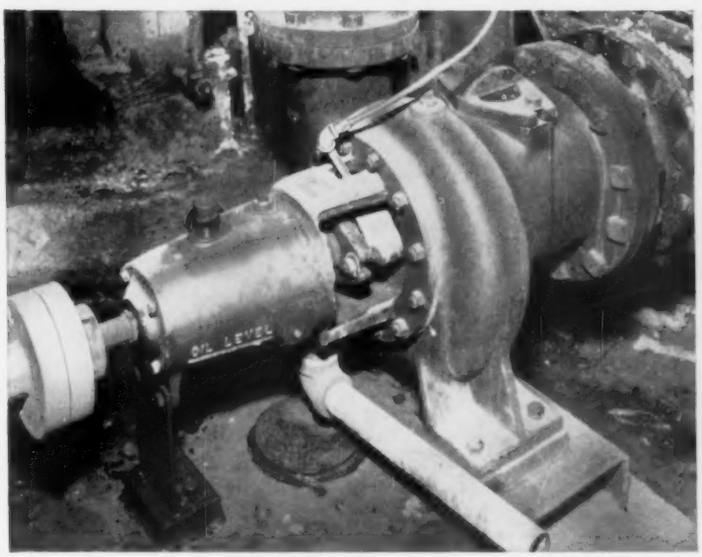
LARGEST MANUFACTURERS OF CALENDER ROLLS IN THE WORLD

TOUGH STOCK-PUMPING JOBS EASILY HANDLED

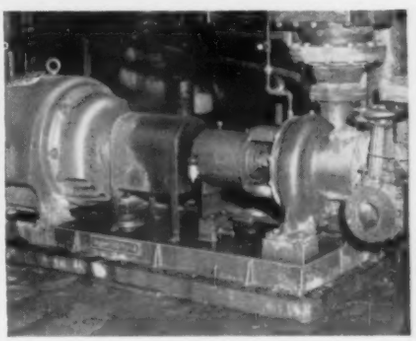
New I-R Diverging-Impeller Pump provides exceptional performance in difficult mill applications



I-R Class 6EH pump, in a large paper company taking suction from deckers and feeding a refiner. The stock pumped has a consistency of 3%, the highest percentage the refiner can accommodate. Pumps previously employed could not handle stock with a consistency above 1 to 2%.



This Class 6EL single-stage, vertically-split Ingersoll-Rand stock pump, installed in a large paper mill handles 5½% bleached and vacuum-type-filter washed soda pulp. Stock, containing air, flows freely and costly shutdowns due to air binding are avoided.



Ingersoll-Rand Class 6EH pump shown is on refiner stand pipe transfer service in a large pulp and paper company. The pump is handling 260 tons per day, 5% stock containing up to 18% air by volume.

In actual mill service, the new Ingersoll-Rand Stock Pump is conclusively proving its ability to handle the toughest job—without air binding or clogging.

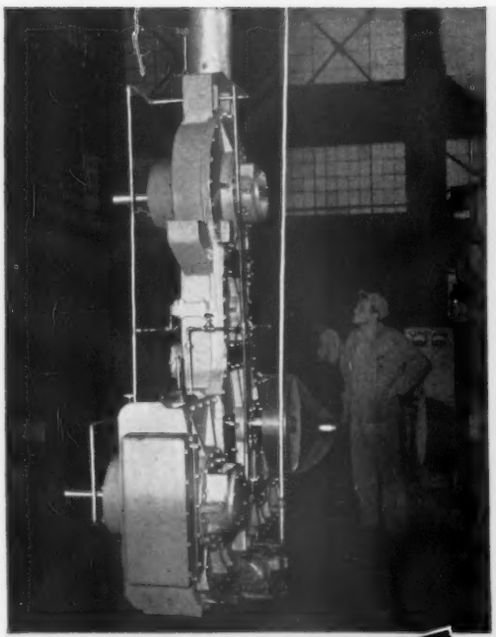
Featuring a diverging type impeller and a specially proportioned casing, it will successfully pump liquids containing air, gases or solids. Stock at concentrations as high as 10% can be handled. This means increased stock chest capacities, reduced bleaching costs and substantial savings in the amount of mill water required. Treated, sized or foamy stock can be pumped without air binding or losing prime. Stock chests can be completely emptied without diluting or washing stock.

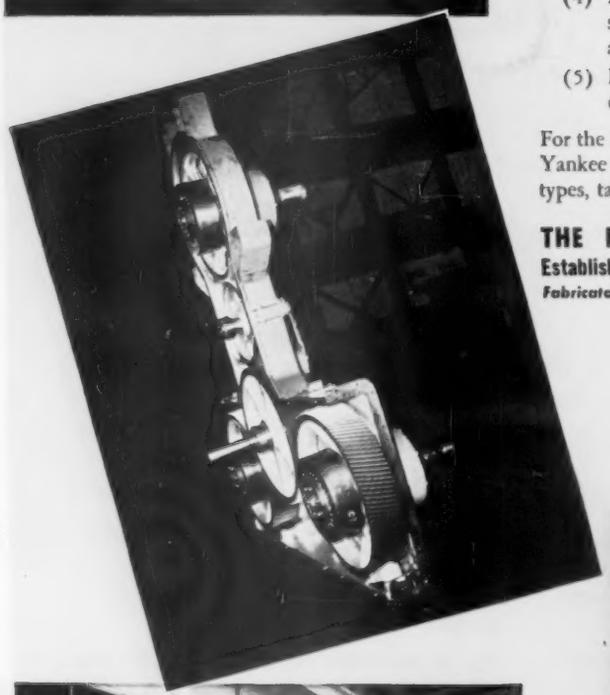
If you now have a stock-moving problem, it will pay you to look into this new Ingersoll-Rand Stock Pump. Available in capacities from 200 to 7000 gpm and heads up to 225 ft., it offers a practical low-cost solution to your most difficult applications. See your nearest I-R branch office for further details.

Ingersoll-Rand 10-457

11 Broadway, New York 4, N. Y.

PUMPS • CONDENSERS • COMPRESSORS • DIESEL ENGINES • AIR AND ELECTRIC TOOLS • VACUUM EQUIPMENT





HIGH-SPEED DRYER DRIVE

Here is the latest high-speed drive for the dryer section — smooth flowing power . . . setting new production records on the latest Puseyjones Machines.

Operated in shop test at equivalent paper speeds up to 4,000 feet per minute with minimum oil temperature rise, and without vibration or back-lash.

Check these important improvements:

(1) Each idler gear supported by two heavy-duty bearings;

(2) All gears dynamically balanced;

(3) Interior channelways for delivering oil direct to each idler gear from the main circulating system;

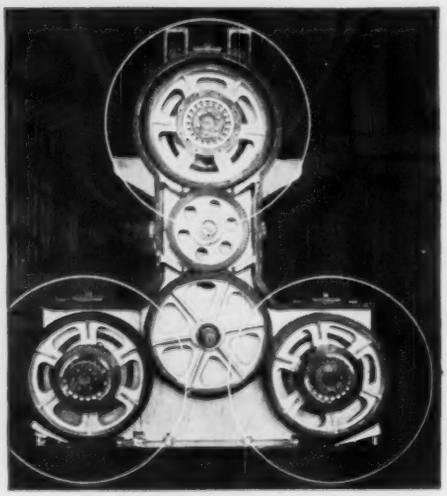
(4) All outside cover plates may be removed in sections for convenience when replacing gears and bearings;

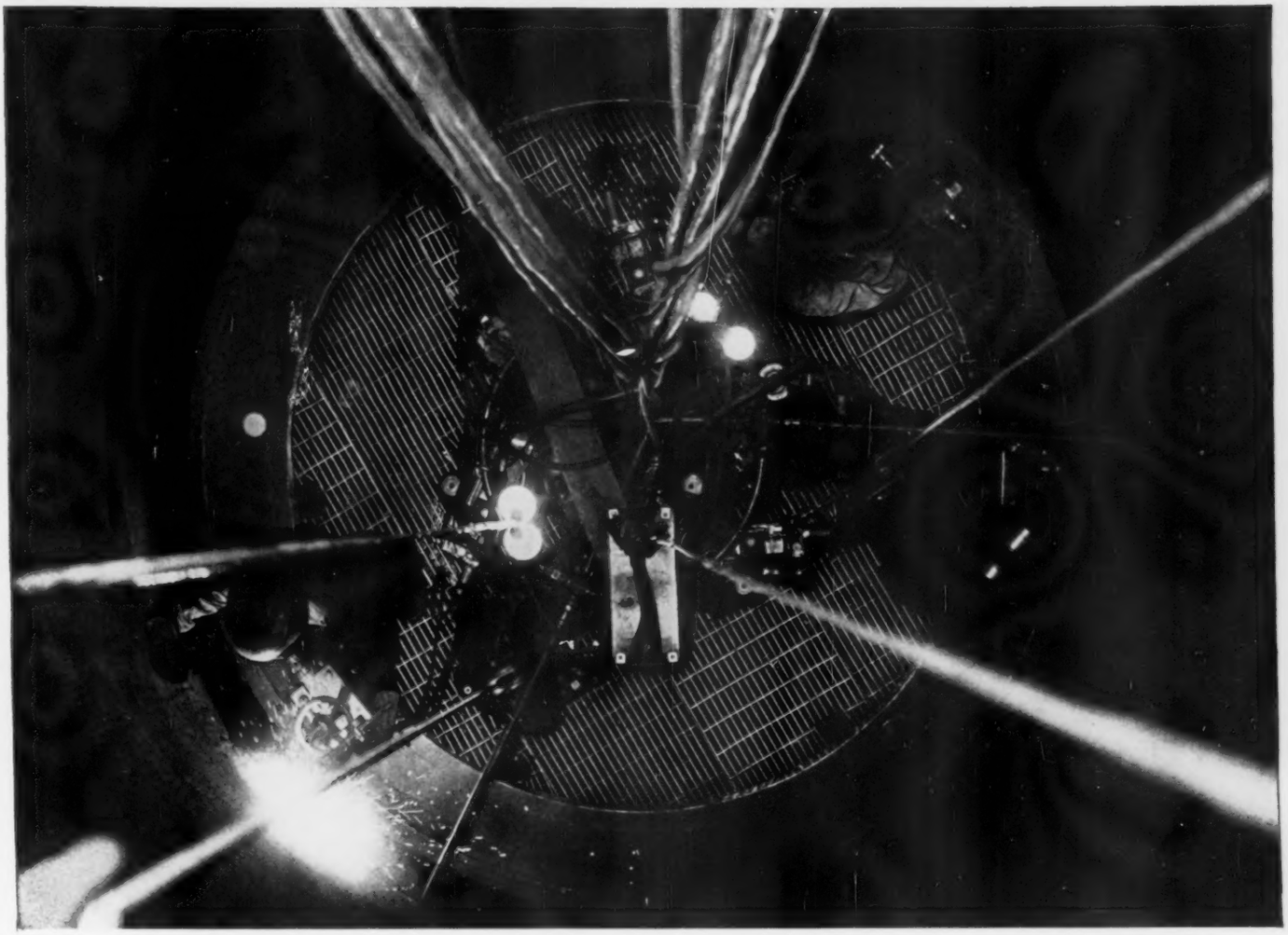
(5) Dryer bearings located outside dryer gears for easy removal.

For the latest Fourdrinier Machine, Cylinder Machine, Yankee Machine or a modification of any of these types, talk to Puseyjones.

THE PUSEY AND JONES CORPORATION
Established 1848 : : Builders of Paper-Making Machinery
Fabricators & Welders of all classes of Steel and Alloy Products
Wilmington 99, Delaware, U.S.A.

THE SIGN OF TRADE MARK SUPERIOR QUALITY





How This Stainless Overlay Was Made: 1/16" diameter Crucible stainless steel welding wire was applied automatically, by the inert gas consumable electrode process, to the entire inside surface of the digester. The finished lining forms a protective coating 1/8" thick. Overlay was made by *The Portland Co., Portland, Maine.*

Stainless overlay stops corrosion of Kraft Digester—saves 2/3 cost of replacement

Corrosion and erosion were eating away the mild steel interior of this Kraft digester. Replacement was considered. But lining it with a complete stainless steel overlay proved a better, far less expensive solution.

The tough, corrosion-resistant stainless lining successfully fights the attack of hot liquors and gases, adds strength, and gives the entire unit a new lease on life—all at as low as 1/3 the cost of replacement. What's more, should it become necessary, additional overlay metal can be applied locally to extend the life of the digester even more.

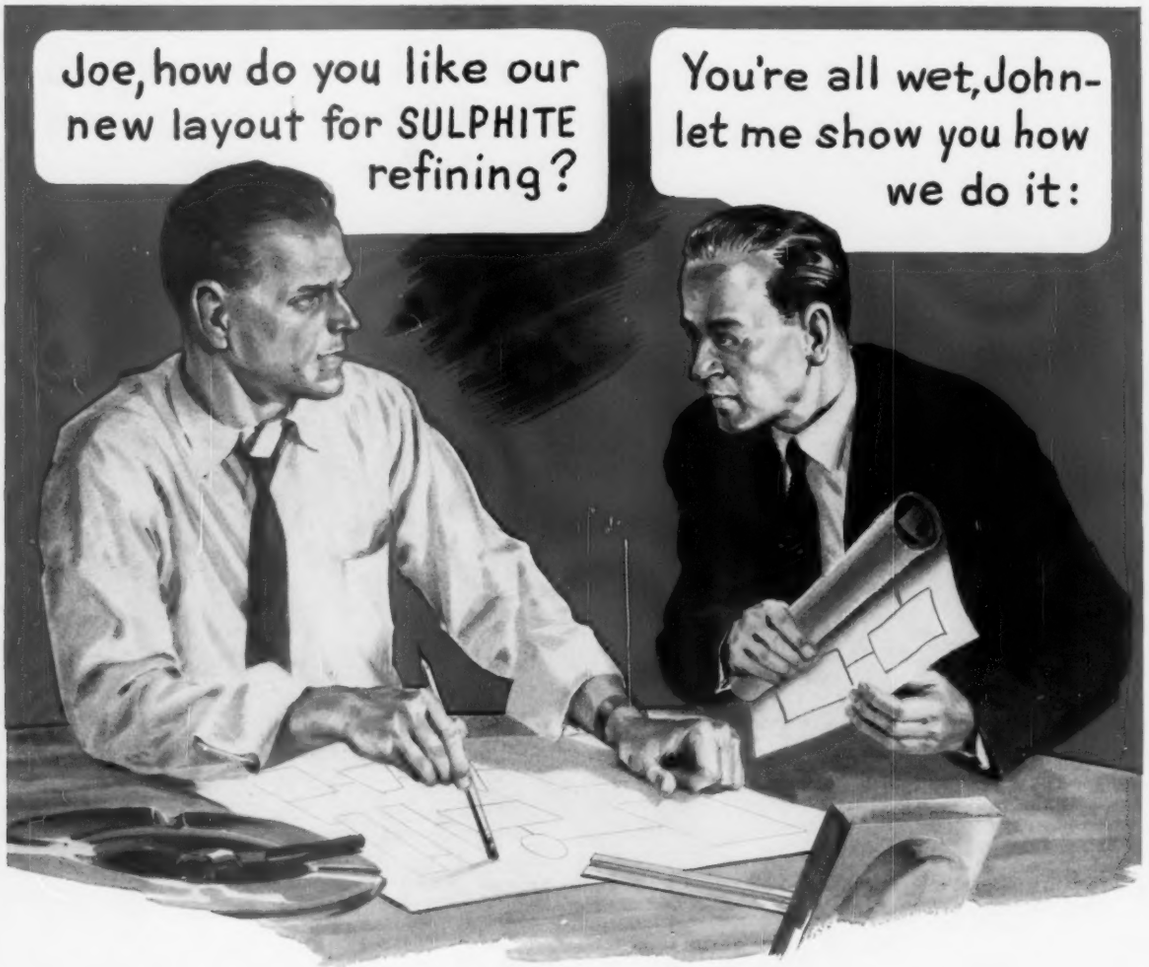
This is just one example of how stainless equipment in the paper mill prevents rust and wear . . . minimizes corrosion and erosion . . . adds years to processing equipment. Further information is contained in a 20-page booklet "Making the Most of Stainless Steels in the Pulp and Paper Industry". Write now for your free copy. *Crucible Steel Company of America, Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

CRUCIBLE first name in special purpose steels

Crucible Steel Company of America

Canadian Distributor—Railway & Power Engineering Corp., Ltd.

They'll both agree on one thing...



Systems vary, and superintendents disagree on treatments — even on the same furnish and for the same end product.

But in leading mills from one end of the country to the other (and in a good many foreign mills), whatever the furnish, whatever the end-product, whatever the system, you'll find Jones equipment — producing better stock, more efficiently and more economically.

Only Jones supplies *all* types of stock-preparation equipment . . . pulpers, beaters, conical refiners, disc refiners, agitators and screens. All types, yes . . . but only one quality — the best!

Ask your E.D. Jones *man first...*

E. D. JONES & SONS COMPANY

Pittsfield, Massachusetts

BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

In Canada:
The Alexander Fleck, Ltd.
Ottawa

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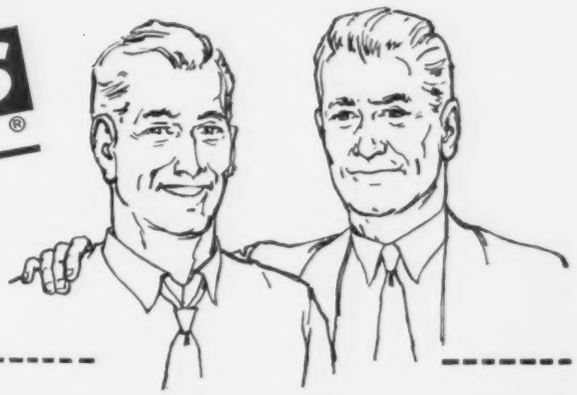
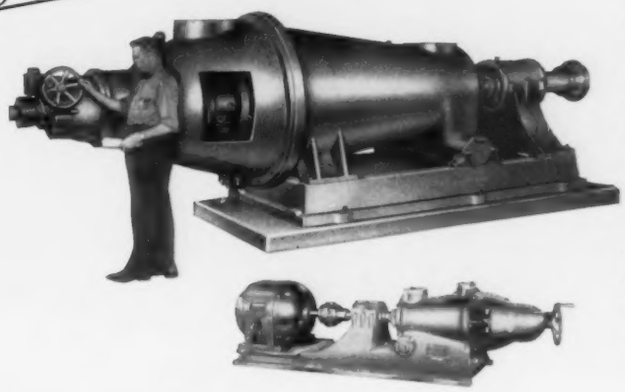
YOU CAN DO IT BETTER

WITH E.D. Jones®



E.D. Jones JORDANS



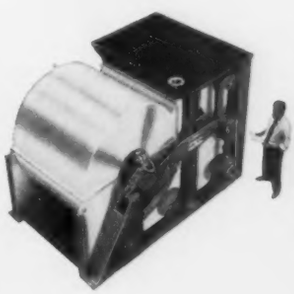
From the mighty Leviathan down to the Midget (for specialties and laboratory work) there is a Jones Jordan for every mill need. A wide variety of tackle, and a choice — on most models — of three types of plug adjustment mechanism, give Jones Jordans the maximum of control and flexibility. Ask your Jones representative or write us for Bulletin EDJ-1007A.

All Jones Jordans, for the past 15 years, have featured split small heads and self-contained bearings to permit quick and easy dismantling and assembly.

E.D. Jones HI-LO PULPER

Only individual rotors, one for circulating and one for defibering — the unique feature of this outstanding Jones machine — can provide fast, complete defibering, without cutting, and with the most efficient use of applied horsepower. The HI-LO is proving this in mill after mill, even on such hard-to-treat material as waste news and wet-strength broke. Ask your Jones representative for details or write for Bulletin EDJ-1063.

E.D. Jones BEATING UNITS



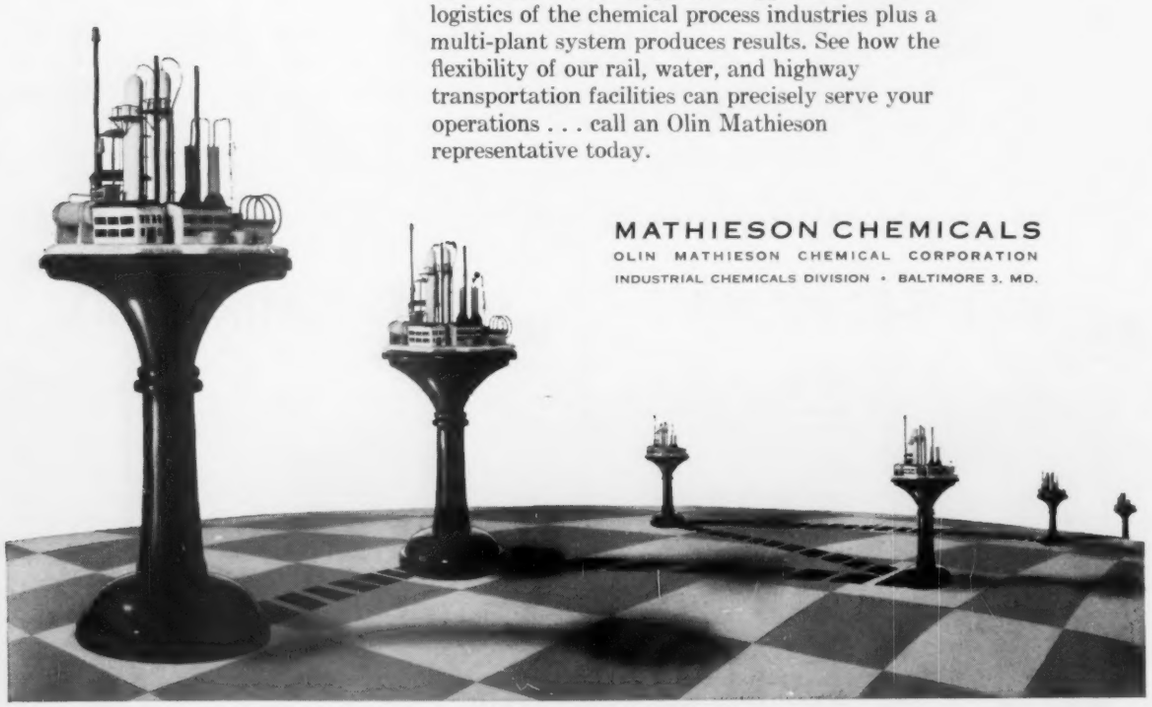
A complete "packaged" unit, incorporating proven principles of Jones-Bertrams design, affording precision control, more positive and uniform treatment of stock . . . and significant savings in installation, floor space, maintenance and power. Available for tub installation or multi-beater set-up for continuous operation. For more information write for Bulletin EDJ-1079.

ITALY, de Bartolomeis • JAPAN, Mitsubishi

ubiquitous chemicals

Where needed, when needed—maximum dependability of chemical supply is best assured by a multi-plant set-up. It smooths out local shortages and surpluses . . . assures you of shipments on schedules that meet your most exacting requirements.

Olin Mathieson's imaginative approach to the logistics of the chemical process industries plus a multi-plant system produces results. See how the flexibility of our rail, water, and highway transportation facilities can precisely serve your operations . . . call an Olin Mathieson representative today.



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OLIN MATHIESON CHEMICAL CORPORATION
INDUSTRIAL CHEMICALS DIVISION • BALTIMORE 3, MD.

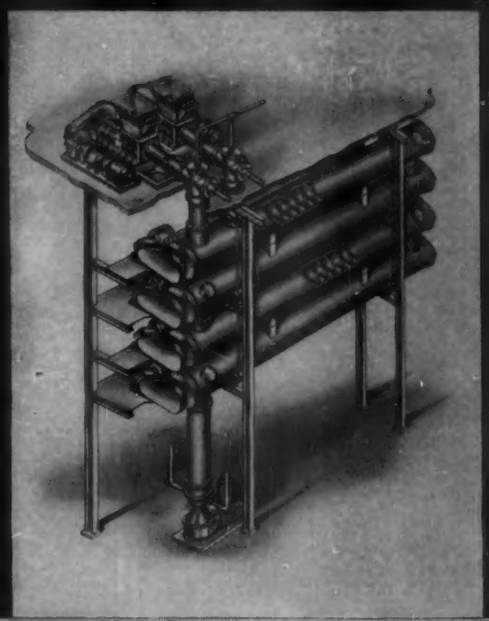
MATHIESON

INORGANICS: Ammonia • Bicarbonate of Soda • Carbon Dioxide • Caustic Potash • Caustic Soda • Chlorine • Hydrazine and Derivatives • Hypochlorite Products Muriatic Acid • Nitrate of Soda • Nitric Acid • Soda Ash • Sodium Chlorite Products • Sulphate of Alumina • Sulphur (Processed) • Sulphuric Acid • **ORGANICS:** Ethylene Oxide • Ethylene Glycols • Polyethylene Glycols • Glycol Ether Solvents • Ethylene Dichloride • Dichloroethylether • Formaldehyde • Methanol • Sodium Methylate Hexamine • Ethylene Diamine • Polyamines • Ethanolamines • Trichlorophenol

4688

CHEMI-PULPERS...

Continuous Digesters produce over 1 million tons of pulp every year



The success of the Chemi-Pulper®, the Continuous Digester built by the Pandia Division of The Black-Clawson Company, is reflected in these production figures.

Based on a 350 day operating year, Chemi-Pulpers in operation throughout the world are producing 1,204,000 tons of all kinds of pulp a year. Tonnage of Chemi-Pulpers now being built adds up to 263,200.

Approximately 86% of the operating and "in process of building" capacity is in the United States and Canada.

Get the full Chemi-Pulper story from Pandia—ask for latest Chemi-Pulper Bulletin No. PC-20.

	Present Production	Tonnage Now Being Built
Felt Pulps (Roofing and Flooring Grades)	420,000	17,500
Building Board Pulps	94,500	35,000
Straw Pulp		24,500
Bagasse Pulp	5,250	
Corrugating Board Pulps	519,750	105,000
Bleached Hardwood		
Neutral Sulphite Pulps	31,500	
High Yield Kraft & Special Pulps	63,000	46,200
Bleached Kraft Pulps	70,000	35,000
Totals	1,204,000	263,200

THE BLACK-CLAWSON COMPANY

PANDIA DIVISION, HAMILTON, OHIO

Stock Preparation Equipment — SHARTLE DIVISION, Middletown, Ohio
Paper and Board Machines — PAPER MACHINE DIVISION, Watertown, N. Y.
Converting Machinery — DILTS DIVISION, Fulton, N. Y.
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British-European Sales and Manufacture — BLACK-CLAWSON INTERNATIONAL LTD., London, England
Offices — 250 PARK AVE., NEW YORK, N. Y. • Atlanta, Ga. • Downingtown, Pa. • Appleton, Wisc. • Portland, Ore.

NICHOLS FREEMAN

another VORVAC® Separator system in operation...

...For simultaneous removal of air and dirt from paper stocks

AIR REMOVAL PROVIDES

INCREASED MACHINE SPEED UP TO 10%

ELIMINATION OF FOAM KILLERS

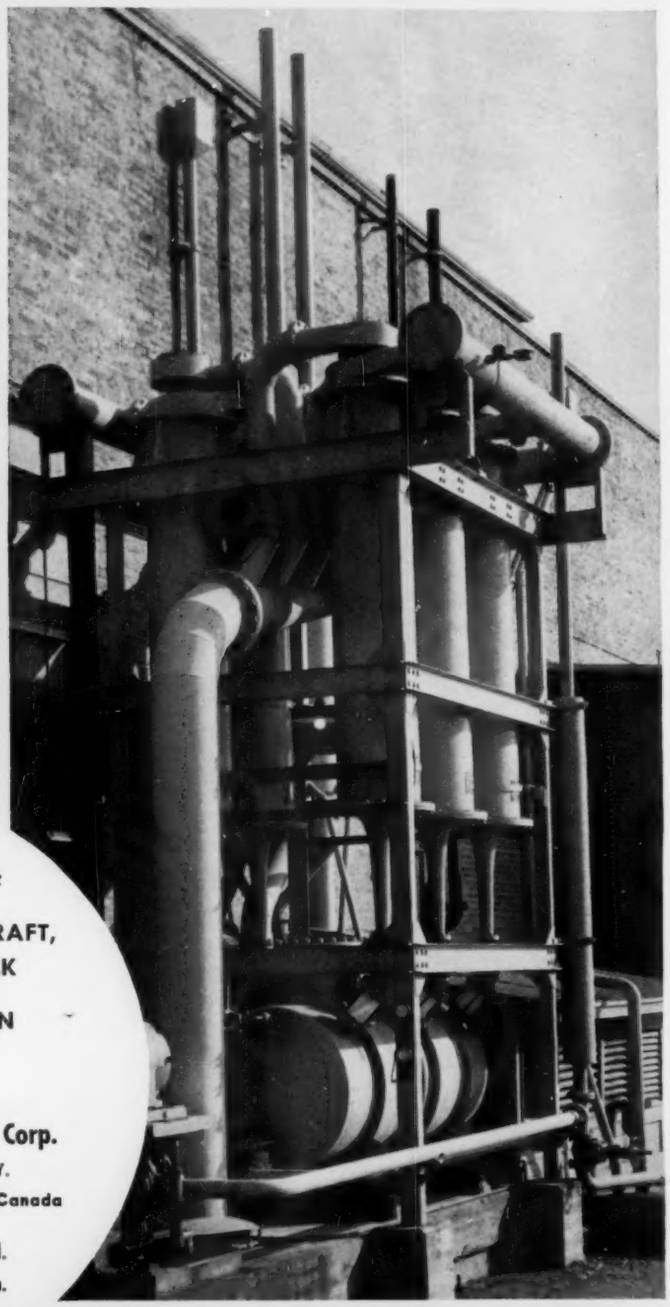
STEAM SAVINGS UP TO 7%

ELIMINATION OF HEAD BOX SHOWERS

DECREASE IN PITCH TROUBLES

BETTER SHEET FORMATION

LOWER HEAD BOX CONSISTENCIES



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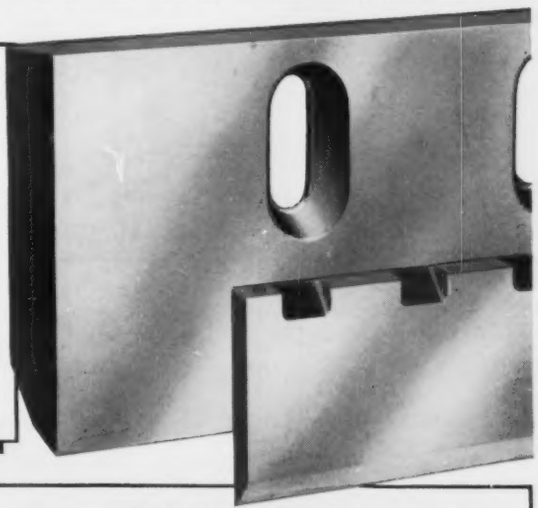
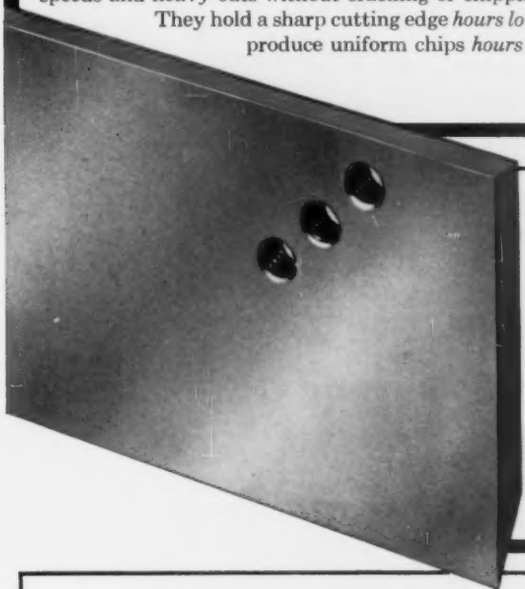
Vorvac System International Paper Co.
Moss Point, Miss.

Your Work is Cut Out for You- DEPENDABLY, QUICKLY, ECONOMICALLY

-with SIMONDS
T-18 Chipper Knives
More Chips in Good Shape!

For more usable chips and less waste dust, get Simonds T-18 Steel Knives. They're made extra tough to take high speeds and heavy cuts without cracking or chipping out. They hold a sharp cutting edge *hours longer* — produce uniform chips *hours longer*.



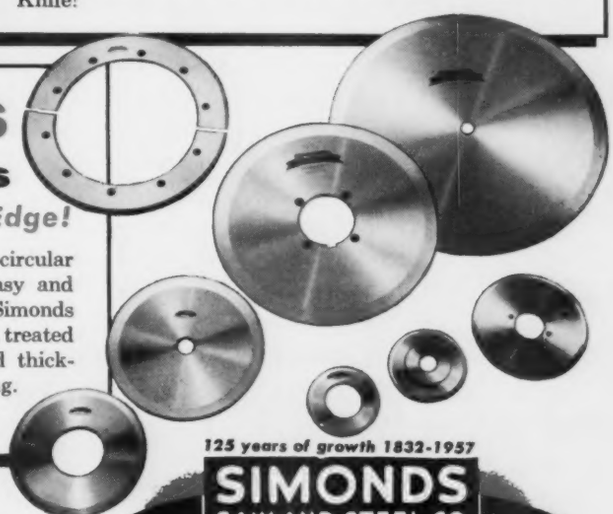


-with SIMONDS
RED STREAK Paper Knives
Their Keener Edge Stays Sharp Longer!

Simonds-made S-301 Steel — developed especially for cutting paper — combines maximum hardness with toughness to give you more cuts per grind. Face-side taper, concave ground for added clearance, plus Simonds famous "mirror finish," provide a keener edge that cuts free, fast and straight. There's longer life in a Simonds Knife!

-with SIMONDS
Circular Cutters
They Run True and Hold Their Edge!

On thinnest tissue or thickest board, Simonds circular cutters, slitters and perforators cut smooth, easy and true. These "cost cutting cutters" are made of Simonds own special electric-furnace steel — specially heat treated and precision-ground to uniform roundness and thickness. There is no better steel for edge holding. There is no better value for your cutter money.



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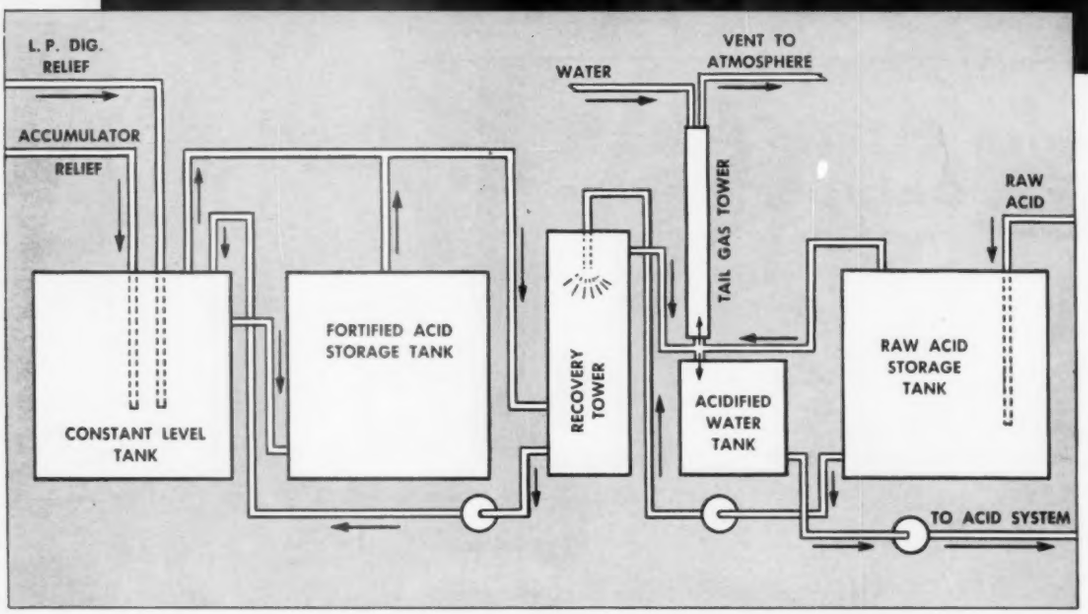
SIMONDS SAW AND STEEL CO.
FITCHBURG, MASS.

Factory Branches in Boston, Chicago, San Francisco and Portland, Oregon, Canadian Factory in Montreal, Que., Simonds Divisions: Simonds Steel Mill, Lockport, N. Y., Heller Tool Co., Newcomerstown, Ohio, Simonds Abrasive Co., Phila., Pa., and Arvida, Que., Canada

Chemipulp-KC Independent SO_2 Gas Recovery System



- **Increases Acid Strength by 1 to 2%**
- **Permits Constant Sulphur Burner Operation**
- **Less SO_3—No Sublimation**

Consisting of a relief gas recovery tower and a tail gas tower with weak acid storage tank, the Chemipulp-KC Independent Recovery System results in stronger, more uniform cooking acid and in more uniform, trouble-free burner operation.

Unabsorbed relief gases from the constant level tank and gases from the fortified-acid storage tank are brought to the recovery tower where they are absorbed in acid and returned to the fortified-acid tank.

Any unabsorbed gases from the recovery tower, together with gases from the raw-acid storage tank are brought to the tail gas tower where they are absorbed in water. The resulting weak-acid solution is pumped to the acid-making towers as make-up water.

No gas is returned to either the discharge or suction side of the gas fan, resulting in constant burner operation and improved recovery.

Write for Details

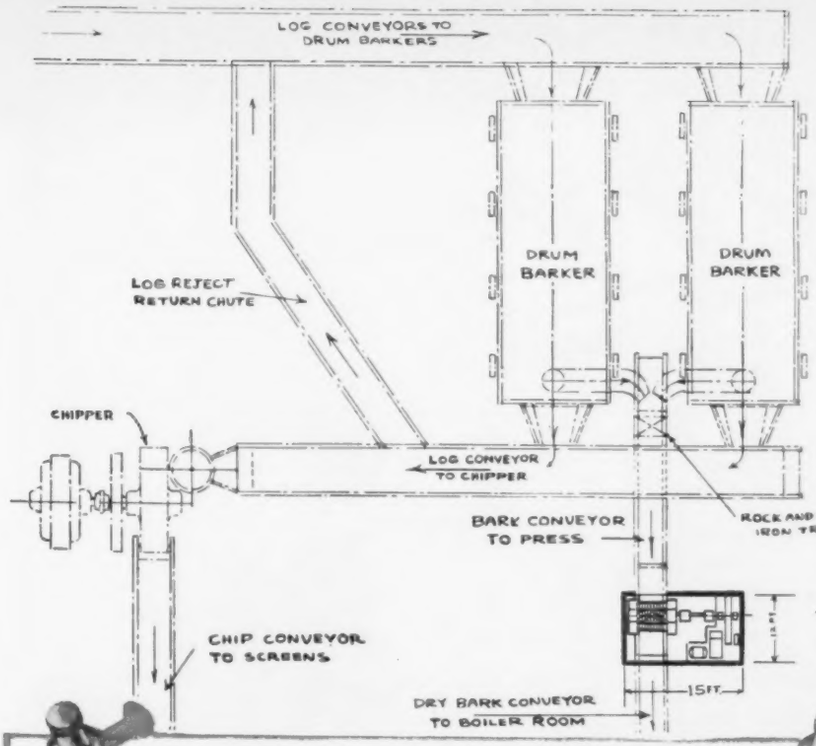
Chemipulp Process Inc.

Woolworth Bldg., Watertown, N. Y.

Associated with Chemipulp Process Ltd., 253 Ontario St., Kingston, Ont.

Pacific Coast: A. H. Lundberg, Orpheum Bldg., Seattle • Lundberg-Ahlen Equipment Ltd., 146 E. Broadway, Vancouver

THE FULTON ROLL PRESS FITS YOUR PRESENT WOOD ROOM

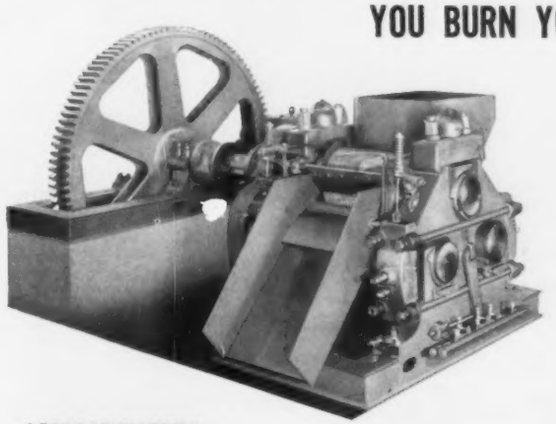


The Fulton "Double-Squeeze" process reduces the moisture content of wet bark from 70% to 47% — adds millions of BTU's hourly to the bark's heating value.

Let us demonstrate, on a sample of your own waste, at no obligation to you. Mail the coupon now.

FULTON BARK PRESS

IT CONVERTS WET BARK TO DRY FUEL... YOU BURN YOUR WASTE!



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Please send full details of the Fulton Roll Press. We are interested in a free test run of.....

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FLOTATION SAVEALLS

The Greatest White Water Clarifier in the Paper Industry!

The first Flotation Savealls installed by Bulkley, Dunton in a United States paper mill—almost 20 years ago—are still operating with the minimum of supervision and maintenance. Since then, Bulkley, Dunton Savealls have become the standard of comparison throughout the paper industry.

Bulkley, Dunton Flotation Savealls recover valuable fiber and filler from white water in a matter of minutes permitting it to be returned immediately to process. The savings in filler and fiber, together with the B.T.U.'s in the clarified effluent, help pay for the installation in a short time. Frequently, the heat recovery is more important than the fiber.

Where stream pollution is a problem, Bulkley, Dunton Savealls may well be the most economical answer. One mill reduced their fiber loss to 41 pounds per day... fifty four thousandths of 1% (0.054%)... well below the 1% required by law!

If you have a white water clarification problem, Bulkley, Dunton will survey your requirements and make recommendations ...with no obligation. For information and literature, write today.

Bulkley, Dunton Processes, Inc.

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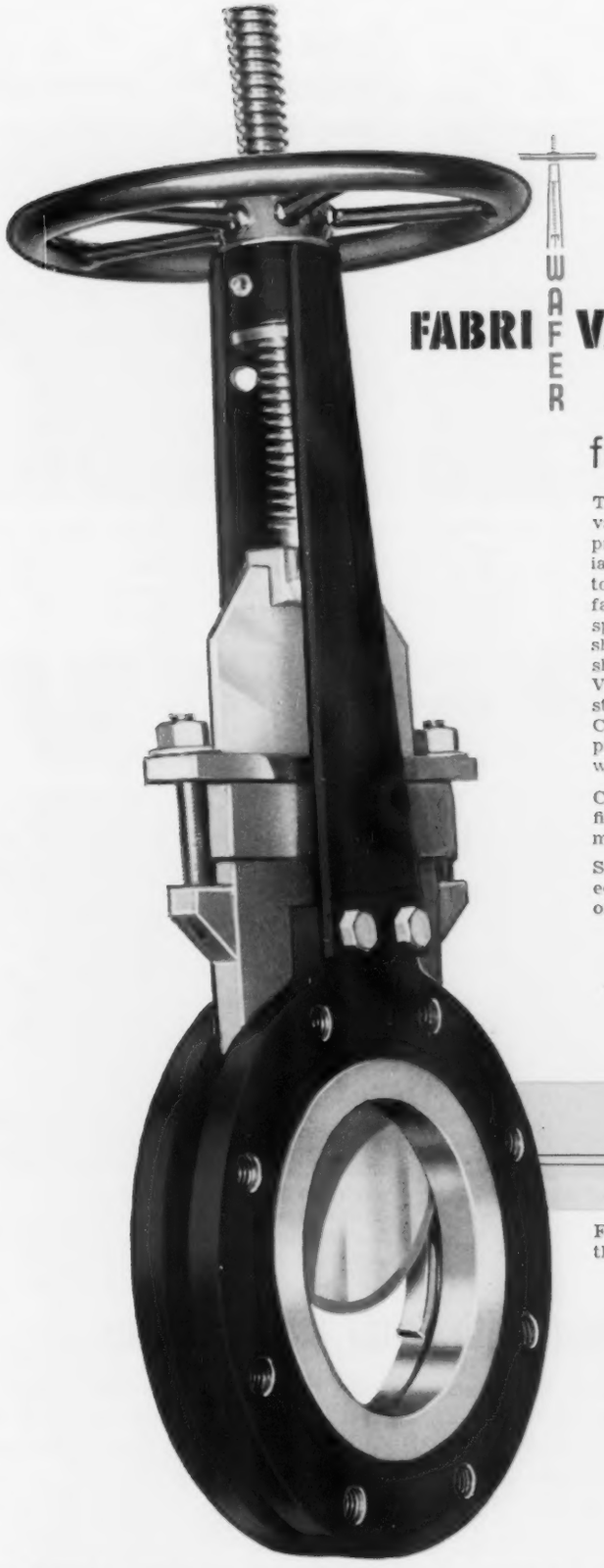


WAFER

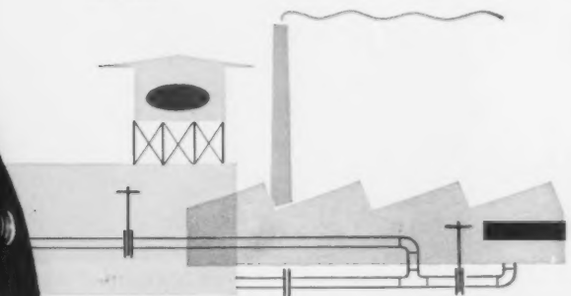
FABRI VALVE

A New Dimension for Modern Industry

The Fabri-Wafer-Valve is a new idea in valve design that answers many difficult production problems, and is already a familiar sight in pulp and paper plants from coast to coast. This new valve allows minimum face-to-face dimensions, permits the use of special metals as required, gives positive shut-off, is light weight and economical to ship, install and maintain. Fabri-Wafer-Valves are available in all sizes from 2″ in stainless, monel, nickel or any combination. Contact your nearest distributor for complete details on the many applications of wafer valves—they can save you money.

CUSTOM-MADE to meet new plant specifications and existing plant replacement or modernization.

STANDARD wafer valves kept in stock for economical replacement without costly loss of time.



Fabri-Valve Co. of America manufactures the world's largest variety of stock valves.

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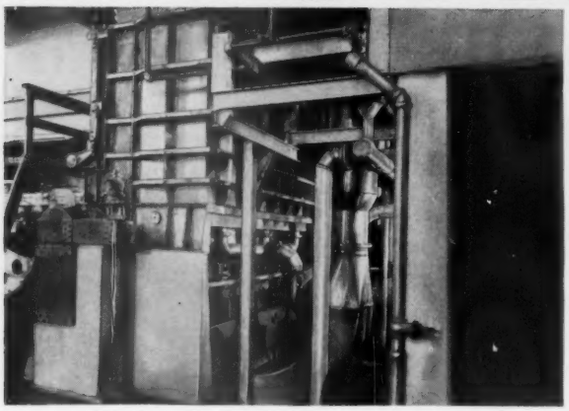
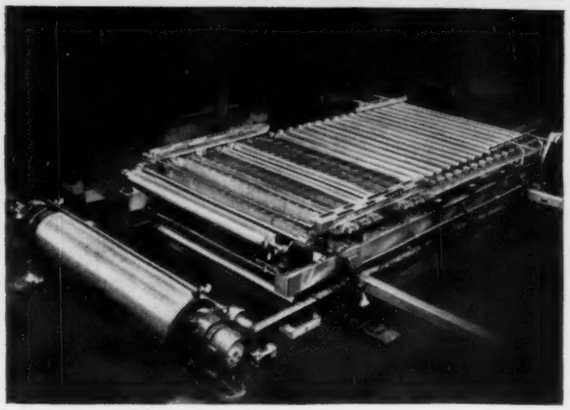
FABRI-VALVE DISTRIBUTORS: CORDES BROTHERS, Wilmington, Calif. • CORDES BROTHERS, San Francisco, Calif. • FELKER BROTHERS, Marshfield, Wis. • LEWISTON PLMBG. & HTG., Lewiston, Idaho • THOS. W. MACKAY & SON, LTD., Vancouver, B. C. • DOUGLAS ROBBINS & CO., Minooka, Ill. • SOUTHERN CORP., Charleston, S. C.

INCREASE

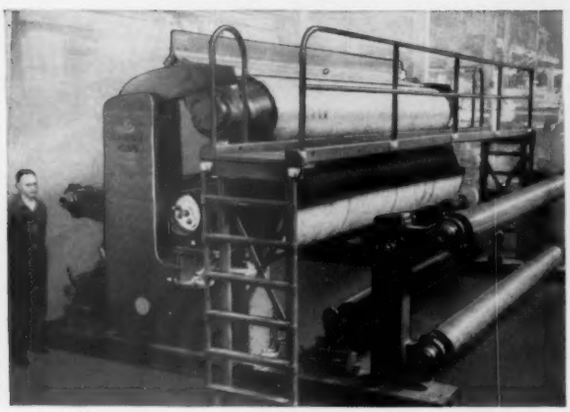


FLOW CONTROL UNIT with multiple manifold distributor and recirculation. This unit gives improved uniformity of delivery into the pond, and together with the specially designed slice gives the optimum in uniform profile, all this at stepped-up speeds.

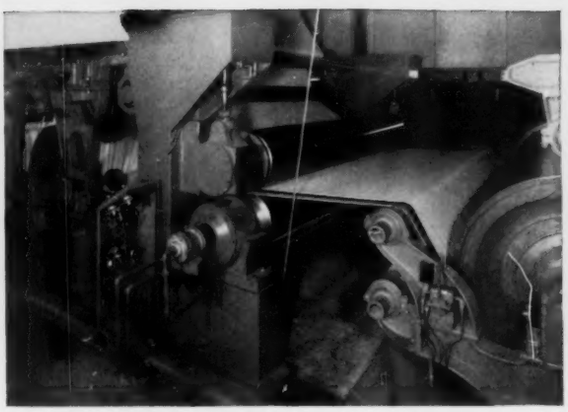


FOURDRINIER. The Sandy Hill removable fourdrinier permits varying components for making the entire range of fine papers. Structurally strong, simple in design, it requires least man-power motion and involves least hazard to wire during wire changes.

IMPROVE



SUCTION PRESSES — Hydraulically operated suction presses are available designed for pressures up to 1,000 pounds per linear inch of nip.



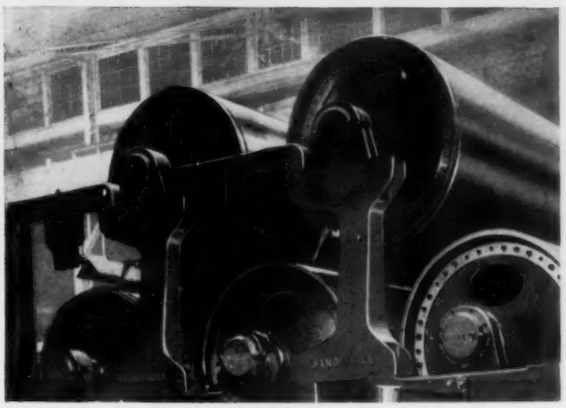
BREAKER STACKS — Properly located in the dryer section, this Breaker Stack insures best results in compacting the sheet and final fiber migration control. Designed for high nip pressures, it operates successfully on high grade printings.

Replace obsolete equipment with Sandy Hill specialties

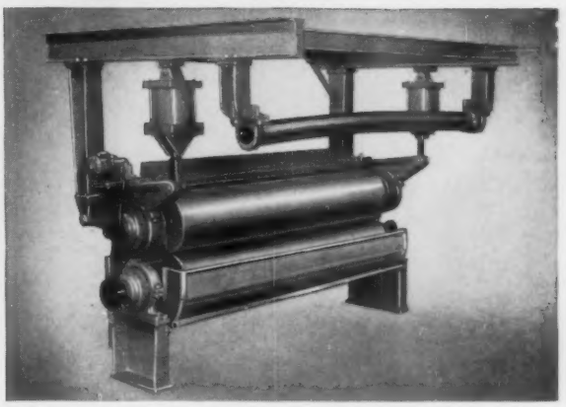
In many mills throughout the country Sandy Hill components are replacing obsolescent equipment at critical points in paper machines. Specially designed and engineered for efficient operation, this Sandy Hill equipment has resulted in increased speeds and improved quality of product.

Shown here are a few of the Sandy Hill specialities, adaptable to existing machines. Let us tell you more about them. At your invitation, a Sandy Hill Sales Engineer will visit your plant and offer a sound plan for machine improvements to keep your mill abreast of the increasingly competitive market.

OUTPUT



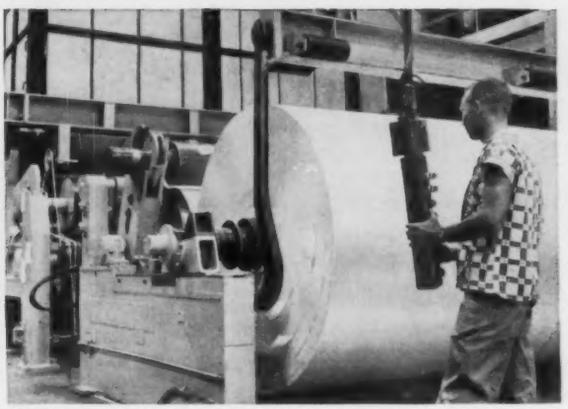
DRYERS — The Dryer Section, often the bottleneck in a modernized paper machine, is no problem when an additional nest of Sandy Hill Dryers is installed. Sandy Hill's pressure tested Dryers have more capacity per unit, so that a smaller number of Dryers meets the requirements for speeded-up production.



SIZE PRESSES — Installed on existing machines by moving dryers, these Size Presses give improved performance in sizing or pre-coating high grade papers. Overhead loading and rolls that withstand chemical action are features.

QUALITY

SELECTIVE DRIVE — Increased range and control of draw, economy of space and maintenance, and unvarying draw between sections are recognized features of the Sandy Hill Selective Drive.



REELS — Sandy Hill offers lightweight Reels for tissues, etc.; standard Pope type Reels for most types of paper; and hydraulically controlled heavy Reels for board or heavy pulp.

IMPORTANT: The first sections of our Centennial Catalog are now coming off the press. Write us now for your copies. Address Box D.

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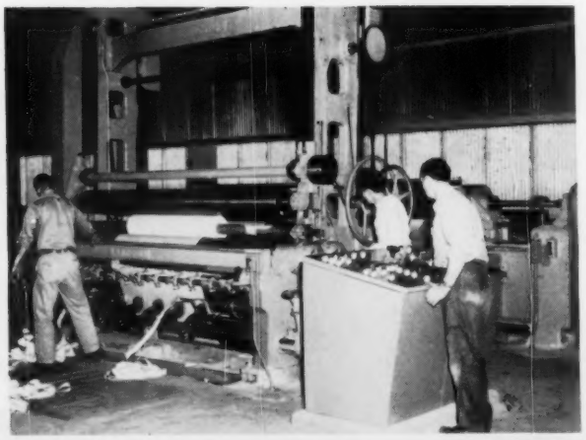
SANDY HILL
IRON AND BRASS WORKS
HUDSON FALLS, N. Y.

P. H. Glatfelter Company

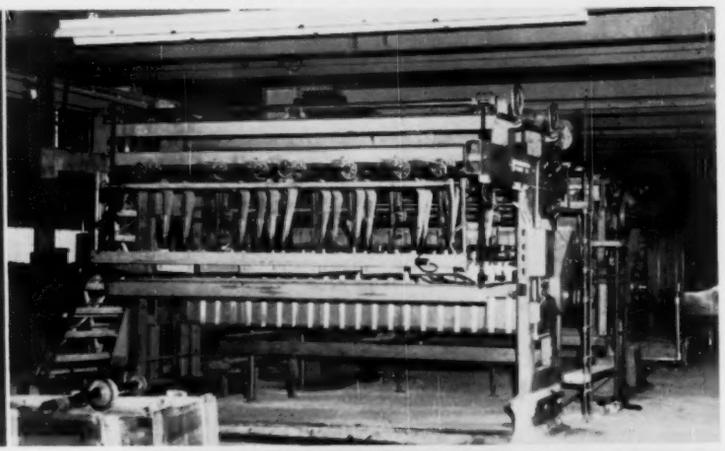
PLANT AT

Spring Grove

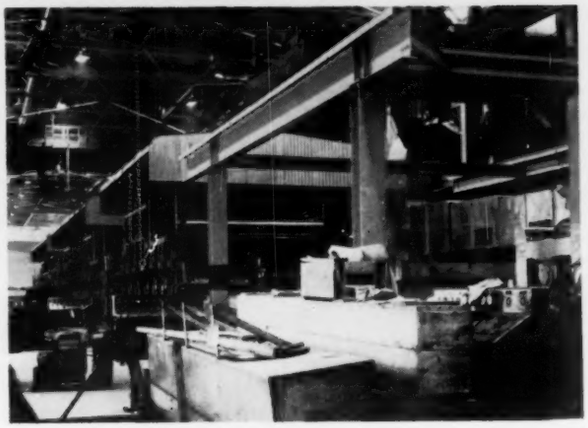
PENNSYLVANIA



another Installation by Eichleay



The new paper machine and allied equipment recently installed at Spring Grove, Pennsylvania, for P. H. Glatfelter Company, by Eichleay Corporation, materially aids the progress of the paper industry. Eichleay Corporation was pleased to perform this work and certainly was rewarded by having made new friends in the paper industry. The Eichleay Corporation performs mechanical construction work with the belief that a satisfied customer is obtained only through the performance of a trouble free, economic and efficient construction project.



EICHLEAY SERVICES

- Industrial Installations
- Construction of Heavy Foundations
- Building and Machinery Moving
- Shoring - Rigging

Eichleay

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CORPORATION

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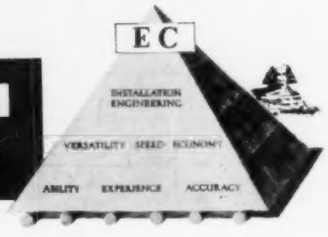
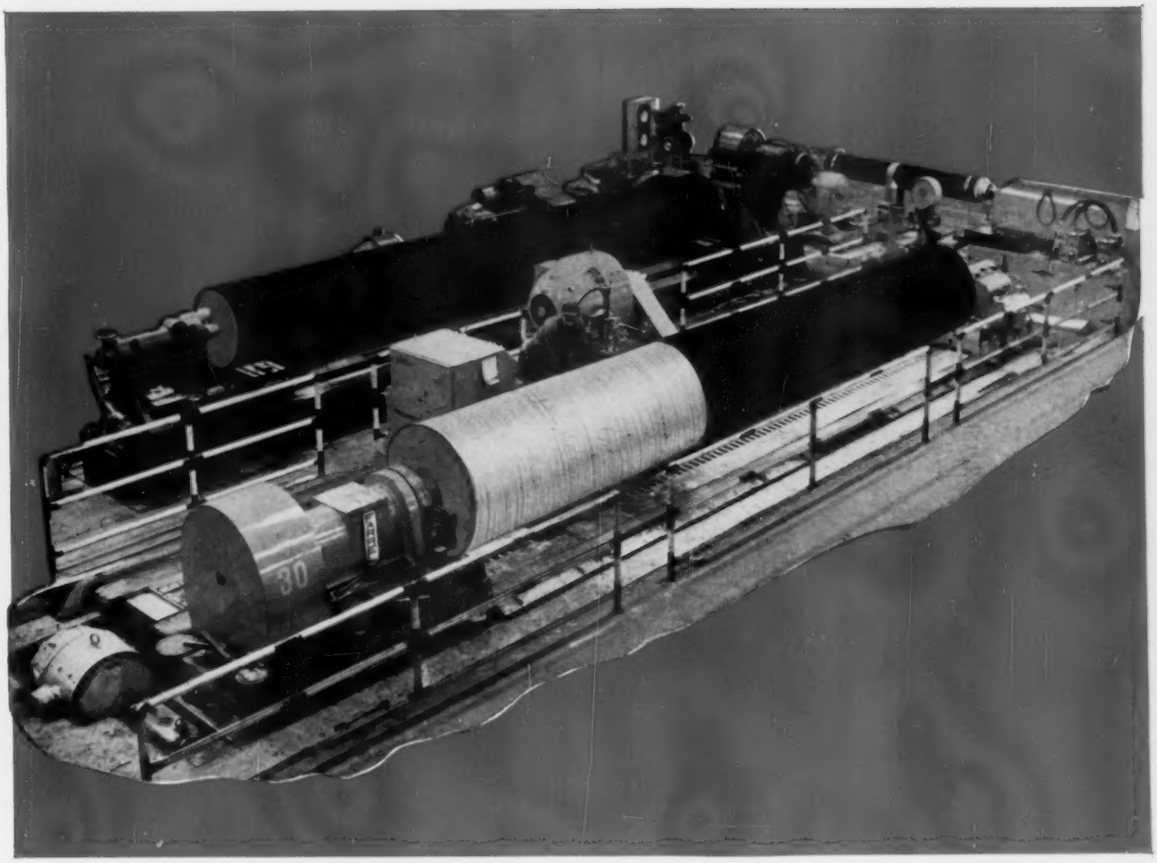


ROLL COVERINGS



What it takes to make precision-perfect roll coverings

It takes the technical skill of rubber chemists and production personnel with years and years of creative experience . . . it takes the most modern, most complete equipment—tools such as these huge grinders and dynamic balancer pictured above . . . it takes a plant location convenient to major highways and railroads . . . it takes a staff of sales engineers with a comprehensive knowledge of your problems, your needs.

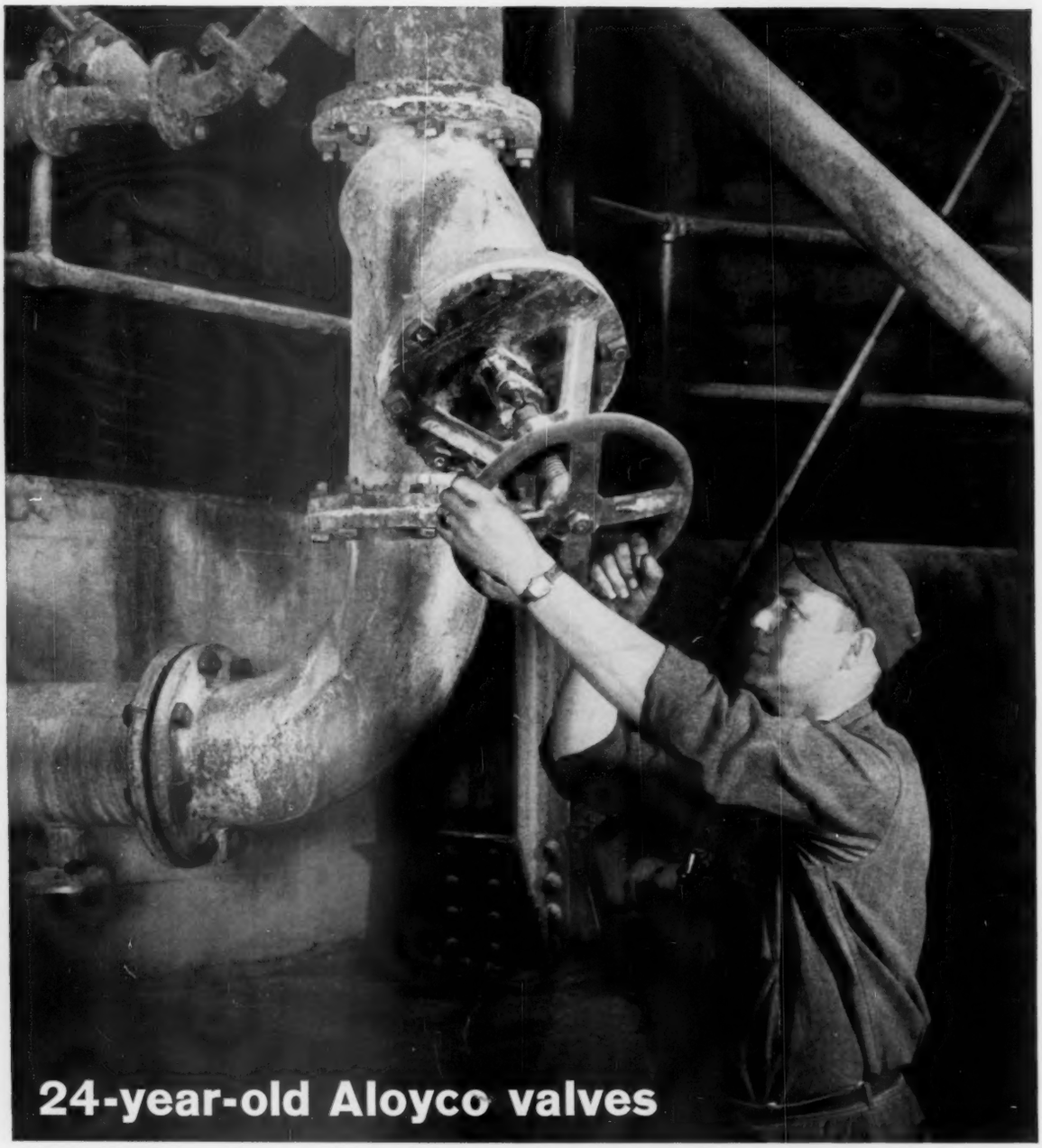
It takes, in short, the many advanced technological, production, and service facilities available to paper mills who specify roll coverings by "U. S."—United States Rubber, who quality control the rubber through every stage of development right to your own paper machine.

Contact a roll covering specialist. Get in touch with us at Rockefeller Center, New York 20, N. Y.

In Canada, contact Dominion Rubber Co., Ltd.

Mechanical Goods Division

United States Rubber



still handling hot acids in Maine pulp mill

This Aloyco Stainless Steel "Y" Valve is one of many in use at the Eastern Corporation mill at South Brewer, Maine.

According to Chief Engineer, F. H. Stetson, "The valves were purchased and installed in 1933 in conjunction with our hot acid system... have been in continuous use since that time."

With this kind of money-saving service, you can see why more and more pulp mills are turning to Aloyco Stainless Steel Valves. To produce a broad line of trouble-free valves in stainless steel calls for long experience in design, engineering and foundry techniques. It also calls for the most modern equipment. Leadership in these vital areas has made Aloyco the world's largest specialist in the manufacture of Stainless Steel Valves. Call us in on your next valve job. Alloy Steel Products, 1316 West Elizabeth Ave., Linden, N. J. 7.10

ALLOY STEEL PRODUCTS CO., LINDEN, NEW JERSEY

slime control

the scientific, economical way!

SLIMODYN

. . . a composition of colloidally dispersed silver-copper alloy and mercury as an organo-metallic—simply precludes bacteria, fungi and mold from becoming resistant simultaneously to the combination of these three heavy-metals. Relatively unaffected by changes of pH; will not shorten wire life or cause foaming.

MICRODYN

. . . a toxicant formulated for systems devoted to production of paper for the food packaging industry, and for those in which organo-mercurials are objectionable.

BOTH COMPOUNDS

. . . are completely dispersible in water, and are also suitable for spraying after washups. They adsorb readily on all surfaces, building a residual germicidal activity; need never be alternated with any other slimicides.

TECHNICAL SERVICE AT NO COST!

Each of our Technical Service Representatives is a chemist or bacteriologist by profession, and is thoroughly experienced in slime control. With full backing of our headquarters research team, he will analyze and solve your slime problem under actual mill conditions, working right in your own laboratory, or using the compact mobile laboratory carried in his car. And he'll work with you for as long as necessary—at no additional cost!

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Get Your Share of World Growth. Don't let overseas markets become your "underdeveloped sales area." Central National Corporation's know-how will help you meet the growing world demand for pulp, paper, paperboard and newsprint. You'll reach important, reliable customers and get results abroad through our own offices and representatives in 55 leading world markets. Contact us today.

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Established 1886

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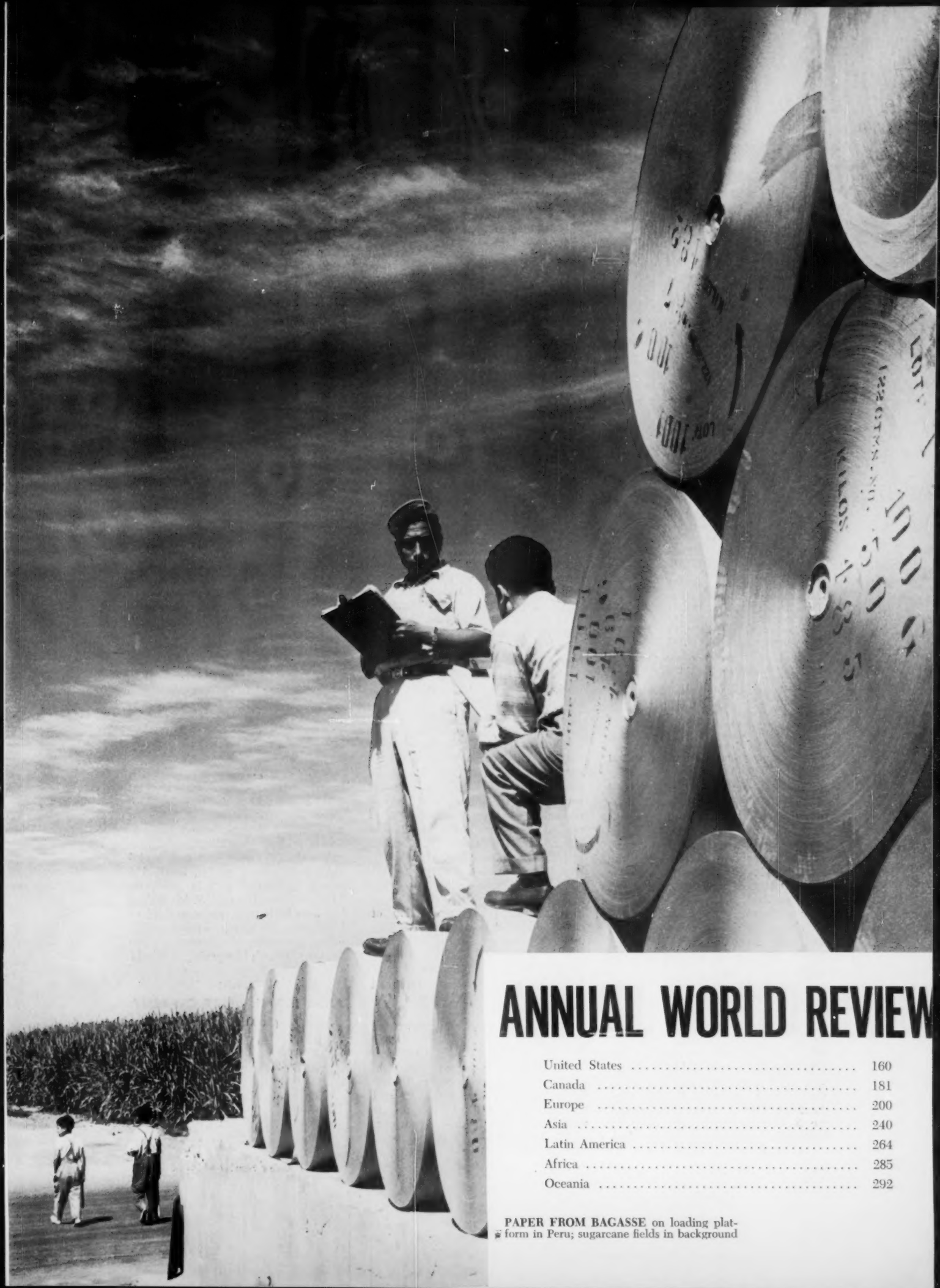
PULP PAPER EXPORT CNC

Representatives in 55 Leading World Markets



ANNUAL WORLD REVIEW

United States 160
Canada 181
Europe 200
Asia 240
Latin America 264
Africa 285
Oceania 292

PAPER FROM BAGASSE on loading platform in Peru; sugarcane fields in background

NORTH AMERICA

U.S.A. Industry at a Plateau

THE UNITED STATES

Learning to Live in 1957 With an Over-Capacity

Population: 168,091,000. *Per capita paper consumption:* 418 lbs.

Production (short tons)	*1955*	*1956*
All paper	30,140,190	31,335,853
Chem. woodpulp (paper grades)	14,285,227	15,294,598
Dissolving woodpulp	983,444	940,340
Mechanical woodpulp	2,728,870	3,022,478
Semi-chemical woodpulp	1,407,654	1,548,156
All woodpulp*	20,739,696	22,121,285
Paper imports	5,383,371	5,835,000
Paper exports	845,177	781,304
Pulp imports	2,214,119	2,332,337
Pulp exports	630,792	525,085

Principal paper grades made: Containerboard, book paper, coarse paper. All grades are made.
Principal paper imports from: Canada.
Principal pulp imports from: Canada, Sweden, Finland.
Principal paper exports to: Canada.
Principal pulp exports to: Britain, France, West Germany, Canada.
*All woodpulp includes screenings as well as grades named above.

By mid-year in 1957, the United States pulp, paper and paperboard industries had learned quite a bit about how to live with over-capacity. It had one good effect. It was a salutary sort of suffering because it created the greatest stimulus since war years for development of new uses for paper and board. For the first time after four successive record-breaking years of all-out production, the technical and sales development staffs had an urgent challenge to fill out spare capacity.

Demand was still riding high in 1957. But capacity had exceeded it, and probably by the end of 1957, the margin would be even greater in some grades. But most observers were confident that by 1959—or certainly, by 1960—the industry would be booming again and more pulp and paper capacity would be needed. Even so, production in 1957 is expected to be near the 31,000,000 mark—very close to 1956 and substantially better than 1955—that year that seemed so wonderful (back in 1955).

Another sharp stimulus for the paper and board industry was the competitive new successes being scored by aluminum, other foils, plastics and even the old tin can. Some segments of this industry felt this very keenly. But in mid-year 1957 there was no clear pattern. One mill might be running four days for a spell, but right nearby another one making the same grades was running six days. Mills took shutdowns to let business catch up; others were running full. Some grades, like book, were running strong; others, such as foodboard, which had experienced phenomenal increases previously, were slumping.

In the long-term picture, the sheer pressure of population growth was expected by many observers to assure better and bigger years ahead.

Total production of all paper and board in the U.S.A. in 1956 was a record 31,336,000 tons, up 4% from 1955. From 1955 to 1956 the increase had been 12%—that was the biggest upward leap since the Korean War year of 1950. This great year—two years ago—was basically the reason the industry found itself in the novel predicament of more capacity than it needed. Capacity increases had pushed ahead a little too rapidly. But still no one doubts that 1957 will be at least the second best year in history, if not the best. It may be close.

FIRST QUARTER REPORTS . . . First quarter (1957) production of paper and paperboard totalled 7,700,000 short tons, second highest in history. It compares with 8,000,000 tons in 1956 and 7,200,00 tons in 1955. If the first quarter pace continued through 1957 it would mean a total of 30,800,000 tons.

First quarter production for paper grades alone was up 0.1% to 3,503,595 tons, due mainly to an 18.8% rise in newsprint to a record 3,503,595. Machine coated paper was up 8.4% to 396,982 tons. Bag rose 12.1% and sanitary tissue, 3.3%. Coarse papers were down 4.1%, bristols except rag, 10.4%, uncoated book, 9.1%, uncoated groundwoods, 7.5%, fine, 0.8%, and glassine, greaseproof and parchment, 1.1%.

In paperboard grades, the total was off 5.1%, down to 3,493,383 tons. Only ones to show increases were special foodboard, 0.4%, and wet machine board, 4.1%.

Records in newsprint were also available for the first five months of 1957, showing a record U.S.A. production of 806,347 tons, up 14.2% over five months of 1956. For all North America, production was up 219,843 tons, or 6.5%.

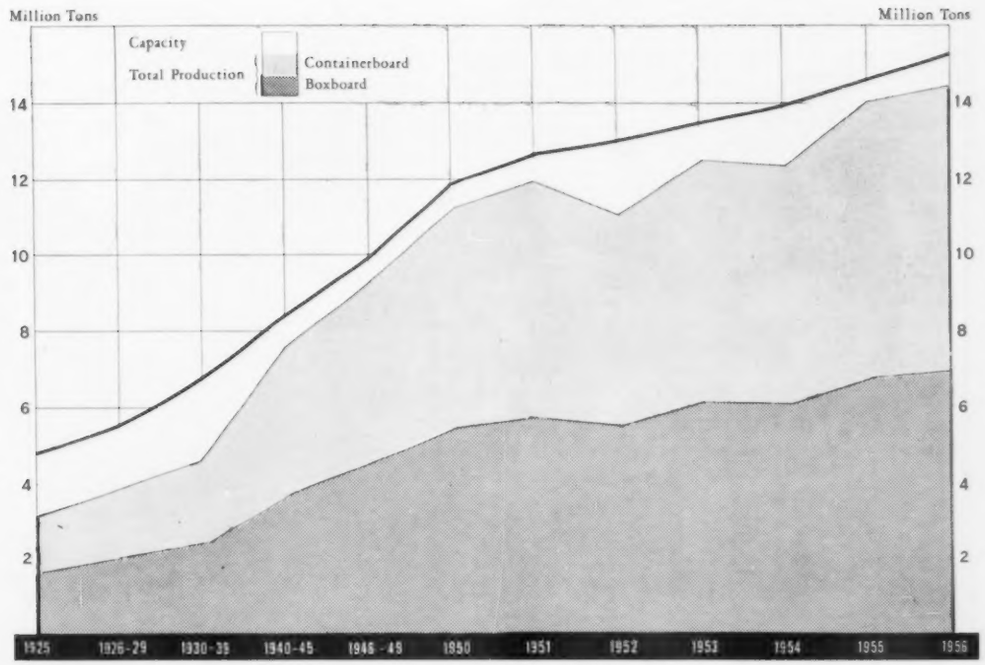
MORE PAPERBOARD THAN PAPER . . . As has been the case every year since 1949, more paperboard was produced in the U.S.A. in 1956 than all other paper grades combined, including newsprint. All paperboard, including construction board, totaled 16,074,000 tons, as compared with 15,659,000 in 1955. Container and boxboard grades alone, totaled 14,366,000 tons, an increase of 2.8%. Even these grades were ahead of all other paper grades, which totaled 13,900,000 tons, a gain of 7.7%.

Value of shipments of pulp, paper, board and paper products exceeded $10,700,000,000 in the U.S. in 1956. Over 460,000 production workers, not counting loggers, earned $2.1 billion in wages.

Woodpulp consumption in U.S., including dissolving grades, reached a record 22,986,000 tons in 1956, up 1,500,000 tons from 1955. More than half was kraft pulp, and one-third of kraft was bleached. Semi-chemical, sulfite, groundwood—all grades were up. (See "What's Happening in World

U.S.A.
ANNUAL WOODPULP CAPACITY
(in short tons)

1934	7,006,310
1939	9,087,030
1946	12,310,164
1949	15,017,813
1952	18,771,390
1955	22,407,489
1956	24,197,531
1957	26,158,531



What U.S. Paperboard Did in 1956

Total U.S. capacity climbed from 4,807,700 tons in 1925 to 15,283,000 tons in 1956, while total production rose from 3,125,000 tons to 14,366,000. Containerboard production rose from 1,470,900 tons in 1925 to 7,522,800 in 1956. Meanwhile, boxboard was climbing from 1,654,100 to 6,843,200 tons.

of Pulp," page 70, for more information on pulp situation.)

Pulpwood consumption in the U.S. reached an all-time record of 35,755,000 cords, an increase of 7.2%. Receipts of 37,176,000 cords was a 13.1% jump and inventories of 6,228,000 cords were up 30%. A separate review of pulpwood developments is a new feature of this issue—found later in this U.S. section.

WHERE IS INDUSTRY GOING? . . . Here are some comparisons and forecasts for U.S. paper and paperboard production:

Year	*U.S.A. Production Short Tons*
1939	13,509,642
1942	17,083,862
1950	24,377,222
1951	26,086,115
1952	24,413,212
1953	26,458,781
1954	26,656,631
1955	29,883,060
1956	31,336,000
*1960	32,000,000
*1965	36,900,000
*1970	41,600,000
*1975	46,600,000

** Forecasts by Stanford Research Institute on basis of population growth, technological advances and competition of materials.*

While production and consumption are running far ahead of the pace that was predicted by the Stanford Institute a few years ago, there is still a long way to go to fulfill 1965 and 1975 predictions. Industry observers also were saying the very high "upper level" forecasts made two years ago by the U.S. Forest Service for 1975 are more likely to be right than their "lower level" forecasts. The "upper level" forecasts had not been taken very seriously by the industry, at first.

These long term forecasts made temporary over-capacity appear more easy to bear.

FUTURE CAPACITY . . . The most-discussed event in many months in the industry was data prepared by the industry for the United States Congress indicating capacity increases up to Jan. 1, 1960. But even as these were finally revealed in June 1957, it was known that many plans for expansion had been shelved, some perhaps permanently, others at least for a good long while. Over 5,000,000 additional tons of pulp capacity have been deferred by North American producers.

So there was nothing really startling to industry leaders in the data prepared for Congress. Most top executives already had seen the figures. Shelved projects will be revived in a hurry, some said, as soon as demand's historic growth pace catches up. Here is what was scheduled—increases from Jan. 1, 1956 to Jan. 1, 1960—running full to meet "all-out" demand:

U.S. woodpulp—up 5,723,111 tons to 29,372,985.

North American woodpulp—up 7,835,096 to 42,439,269.

All U.S. paper grades—up 3,448,000 tons to 18,905,000.

U.S. newsprint—up 938,000 tons to 2,469,000.

U.S. uncoated book paper—up 382,000 tons to 2,062,000.

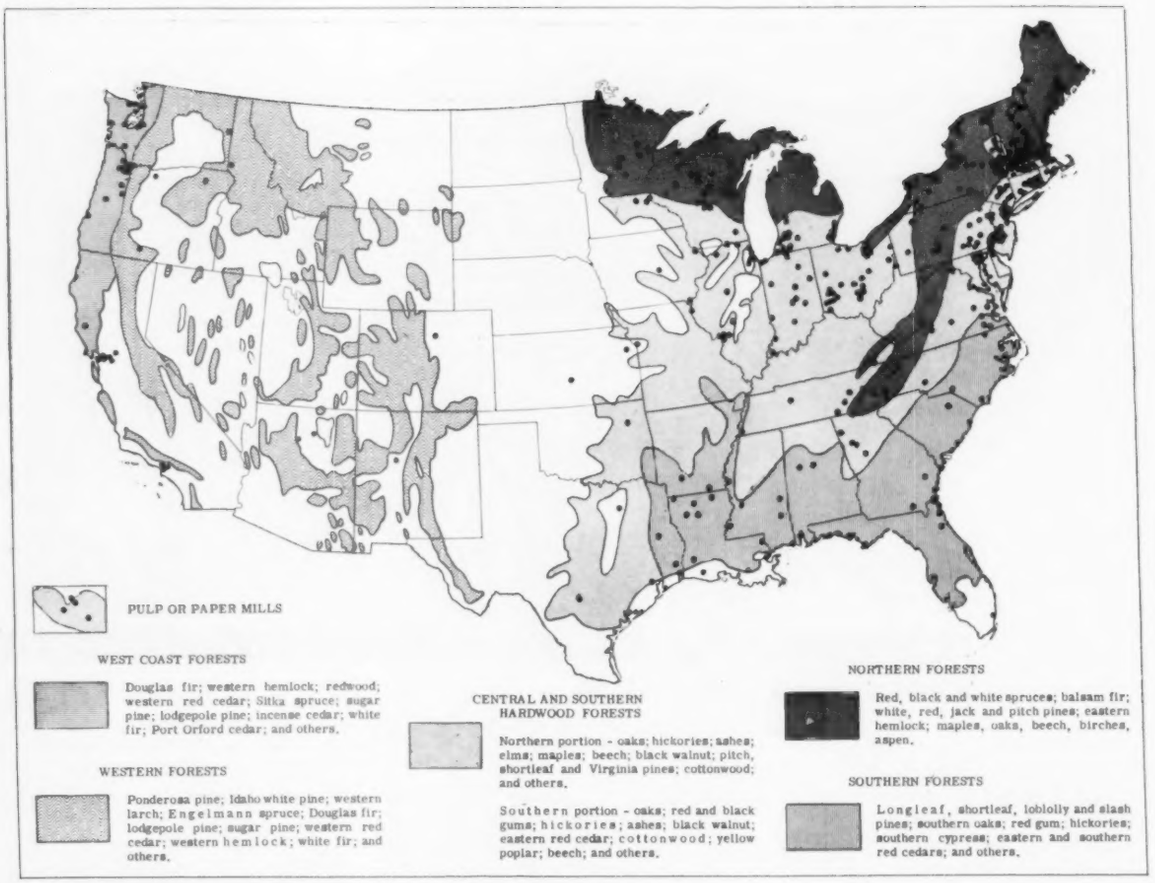
U.S. machine coated book paper—up 582,000 tons to 1,850,000.

U.S. tissue-sanitary—up 228,000 tons to 2,066,000.

U.S. coarse grades—up 371,000 tons to 4,284,000.

PAPERBOARD CAPACITY . . . A separate survey made for the government by the National Paperboard Assn. shows that on an "all-out" demand basis, capacity already in existence or under construction for paperboard will total 18,435,000 tons by Jan. 1, 1960. This compares with 16,536,000 tons as of Jan. 1, 1957. Containerboard capacity will rise from 8,628,000 to 10,043,000 tons; boxboard from 7,908,000 to 8,392,000 tons. On a 313-day year basis, this capacity for all paperboard would only show a rise from 15,328,000 tons to 17,099,000. Containerboard would reach 9,143,000 tons and boxboard, 7,956,000 tons.

Additional paperboard capacities under consideration, but not started,


PULP OR PAPER MILLS
WEST COAST FORESTS
Douglas fir; western hemlock; redwood; western red cedar; Sitka spruce; sugar pine; lodgepole pine; incense cedar; white fir; Port Orford cedar; and others.
WESTERN FORESTS
Ponderosa pine; Idaho white pine; western larch; Engelmann spruce; Douglas fir; lodgepole pine; sugar pine; western red cedar; western hemlock; white fir; and others.
CENTRAL AND SOUTHERN HARDWOOD FORESTS
Northern portion - oaks; hickories; ashes; elms; maples; beech; black walnut; pitch, shortleaf and Virginia pines; cottonwood; and others.
Southern portion - oaks; red and black gums; hickories; ashes; black walnut; eastern red cedar; cottonwood; yellow poplar; beech; and others.
NORTHERN FORESTS
Red, black and white spruces; balsam fir; white, red, jack and pitch pines; eastern hemlock; maples, oaks, beech, birches, aspen.
SOUTHERN FORESTS
Longleaf, shortleaf, loblolly and slash pines; southern oaks; red gum; hickories; southern cypress; eastern and southern red cedars; and others.

Pulp and Paper Mills and Forest Regions of the United States

American Forest Products Industries Inc.

total 1,580,000 tons on an "all-out" basis, or 1,416,000 on a 313-day basis.

"PROFIT SQUEEZE" . . . ONE OF BIG 1957 PROBLEMS . . . The current squeeze on profits of pulp and paper companies is one of the most disturbing phenomena in the industry. A survey made at the Institute of Paper Chemistry of 16 major pulp and paper companies making 26% of total U.S. output shows that retained earnings of these companies slumped from 16% to 10% of the total "net product" in the ten years from 1946 to 1955. The net product is what's left after all costs, except wages, are deducted. Wages stayed about the same—declining from 56% to 55% of net product. Profits, dividends plus retained earnings, dropped from 24% to 20%. Taking a bigger bite every year has been taxes—climbing from 19% to 24%—almost all at expense of profits.

Without retained earnings, business lacks the capital needed for expansion. The annual reports of companies in 1957 showed earnings continuing to decline, even when sales were going up. Higher costs were largely responsible. Will American industry have to scratch for investment funds in future years? These trends, if continued, could blot up what is regarded as the life-blood of industry . . . earnings for reinvestment and growth.

The special regional reports in this U.S.A. section—both the general reviews and the pulpwood reviews were prepared in the field by William F. Diehl, Jr., Southern Editor; Louis H. Blackerby, Western Editor; Maurice R. Castagne, Eastern Editor, and Albert W. Wilson, Editor of PULP & PAPER.

Expansion, Production Records Make Southern News Again

—Atlanta

Despite the "soft market" bugaboo heard throughout the land, the South in 1956 continued its almost legendary growth, expansion and production records. Production continued to soar, though some mills admittedly enjoyed "short vacations" to pick up the market slack. Producing almost 65% of the nation's paper, the South announced an unprecedented number of new mills for the next two to three years.

One of the more popular after-lunch topics was that the South, with its phenomenal 159% increase in production since World War II's end, is running out of mill sites. One engineer told PULP & PAPER: "When the presently planned mills are completed, there won't be a good paper mill site left in the South." Those who have studied the situation closely say there is more chaff than wheat in the theory that mill sites are getting as rare as whooping cranes.

Commented one industry vice president: "So you have to scrub around a little . . . if you got the money, the South's got the spot."

A YEAR OF INNOVATIONS . . . Technically, the South made some strong medicine in '56. At Palatka, Fla., Hudson Pulp & Paper Co. started up its 80-tons-a-day tissue mill, first in the nation to make tissue completely from Southern pine. Use of hardwoods slipped more and more

into the limelight, sparked by the start-up early in the year of Crossett Co.'s new foodboard mill. Union Bag-Camp announced its new major expansion at Savannah would include a 300-tons-a-day hardwood pulp mill. St. Regis began sweeping studies of hardwood pulping at Pensacola laboratories and plans to use hardwood blends in its big 1,000-tons-a-day expansion at Jacksonville.

Tremendous changes came in the Southeastern states. Total production in all grades in Alabama, Georgia, Mississippi, Tennessee and the Carolinas climbed to a new high: 7 million tons in 1956. In 1946 the same area turned out 2,700,000 tons. Increase since the war: 159%, an amazing growth compared to the national average increase, 55.3%.

Georgia's gain since the war's end was 364.7%, pushing the state from seventeenth place in the nation to sixth. Florida boomed its production 219% during the same period of time. Typical are production changes: Georgia, from a skimpy 353,885 tons to 1,644,539, and Florida from 550,786 tons to 1,756,816.

What do the production figures for one of the biggest of the Southern kraft Bunyans look like? At Union Bag-Camp, Savannah, possibly the largest mill in the world, although the International Paper Co. mills at Georgetown and Mobile are nip and tuck, here is last year's production:

700,000 tons of paper and paperboard; seven billion paper bags; 63,384 tons of boxes and corrugated sheets; 42,225 tons of crude and refined tall oil; 1,667,492 gals. of turpentine.

According to the U.S. Pulp Producers' Association, Inc., the South boosted production from 9,251,287 tons of kraft pulp in 1955 to 10,883,223 in 1956.

EXPANSION PLANS CONTINUE

How Does Your State Rank in Pulp and Paper?

Wisconsin made history in 1955, U.S. census figures just recently released reveal. It passed over New York to become the No. 1 papermaking state in the U.S.

Washington State is still far ahead as the No. 1 pulp manufacturing state, making more than one-eighth of all the pulp in the U.S. It has been No. 1 state since passing Maine in the early 1940's. Three Southern states likewise have passed Maine.

In papermaking, New York had held the leadership since the early 1900's, and before that for many decades, Massachusetts was the leader.

Wisconsin was in No. 2 spot from 1922 to 1955, passing Michigan and Louisiana to get that high.

Now New York is a close No. 2, Louisiana, also a close No. 3, with Florida, Michigan, Georgia, Maine, Pennsylvania, Ohio and Washington completing the "Big Ten" of papermaking. Massachusetts, the 19th century champion, is No. 17.

Washington Retains Title

In woodpulp, Washington state hasn't had a serious challenger for many years. Much of the pulp made in Washington is marketed and finds its way into paper made in some 15 eastern and Midwestern states. It made nearly 700,000 tons more pulp than its closest rival, Florida, now No. 2 state. Georgia, Louisiana, Maine and Wisconsin follow in that order. These states have been the "Big Six" in woodpulp since the early '40s and probably longer.

Ever since the early '40s, Washington has made at least a half million tons more than any other state every year.

For number of mills, plus converting plants, of course, New York leads with over 1,000 and Pennsylvania with 418 is next, followed by Illinois, Massachusetts and California.

In relation to other industries, pulp and paper is bigger in Maine than in any other state. Nearly 17% of Maine's industrial workers are in pulp and paper. Louisiana is next with 11.7% in pulp and paper; Florida is third with 9.8%; Mississippi fourth with 9%; Washington fifth with 8.5%; Wisconsin and New Hampshire tied for 6th with 7.8% and Minnesota is eighth with 7.5%; Vermont is ninth with 5.5%; Arkansas tenth with 5.2%.

HOW STATES RANK IN PULP PRODUCTION

1955—Latest Year Available

Rank	*State*	*Woodpulp Produced (tons)*	*Percent of U.S. Total*
1.	Washington	2,710,906	13.1
2.	Florida	2,030,754	9.8
3.	Georgia	2,027,599	9.8
4.	Louisiana	1,598,349	7.7
5.	Maine	1,483,783	7.2
6.	Wisconsin	1,167,596	5.6
7.	Alabama, Tennessee°	1,142,255	5.5
8.	South Carolina, Maryland°	1,125,500	5.4
9.	Mississippi	1,053,226	5.1
10.	Virginia	997,698	4.8
11.	North Carolina	924,910	4.5
12.	Oregon	834,189	4.0
13.	New York	566,374	2.7
14.	Minnesota, Iowa°	547,064	2.6
15.	Texas	484,677	2.3
16.	Arkansas, Oklahoma°	379,217	1.8
17.	Pennsylvania	359,055	1.7
18.	Michigan	289,859	1.4
19.	New Hampshire	256,217	1.2
20.	Ohio, Indiana, Illinois°	181,365	0.9
21.	New Jersey	94,904	0.5
22.	Rhode Island, Connecticut°	80,016	0.4
23.	Vermont	20,226	0.1
	All other states	383,957	1.9
	TOTALS	20,739,696	100.0

° U.S. Census pairs some states in order not to disclose production of a single mill.

HOW STATES RANK IN PAPER AND PAPERBOARD PRODUCTION

1955—Latest Year Available

Rank	*State*	*Production (tons)*	*Percent of U.S. Total*
1.	Wisconsin	1,939,357	6.4
2.	New York	1,911,742	6.3
3.	Louisiana	1,847,000	6.1
4.	Florida	1,756,816	5.8
5.	Michigan	1,753,831	5.8
6.	Georgia	1,644,539	5.5
7.	Maine	1,603,170	5.3
8.	Pennsylvania	1,596,898	5.3
9.	Ohio	1,556,761	5.2
10.	Washington	1,439,085	4.8
11.	New Jersey	1,221,567	4.1
12.	Virginia	1,103,094	3.7
13.	South Carolina	1,009,474	3.3
14.	California	959,032	3.2
15.	Illinois	880,100	2.9
16.	Minnesota	853,420	2.8
17.	Massachusetts	794,288	2.6
18.	North Carolina	736,193	2.4
19.	Mississippi	731,205	2.4
20.	Alabama	679,710	2.3
21.	Tennessee	531,913	1.8
22.	Texas	523,896	1.7
23.	Connecticut	314,600	1.0
24.	Maryland	307,329	1.0
25.	New Hampshire	304,147	1.0
26.	Indiana	300,503	1.0
27.	Missouri	79,592	0.3
28.	Delaware	54,183	0.2
29.	West Virginia	30,356	0.1
	All other states	1,696,389	5.7
	TOTALS	30,140,190	100.0

HOW STATES RANK IN NUMBER OF PULP, PAPER AND CONVERTING PLANTS . . . 1954 (Latest)

1.	New York	1,032
2.	Pennsylvania	418
3.	Illinois	397
4.	Massachusetts	364
5.	California	334
6.	New Jersey	312
7.	Ohio	273
8.	Wisconsin	196
9.	Michigan	189
10.	Missouri	116
11.	Connecticut	109
12.	Indiana	96
13.	Washington	82
14.	Texas	81
15.	Minnesota	80

. . . Again, 1956 brought announcements of expansions. Tied to some of these were last year's mergers: Union Bag & Paper Corp. and Camp Mfg. Co.; Continental Can and Gair; Owens-Illinois and National Container; Weyerhaeuser and Kieckhefer, and many more. Soon after the Union Bag-Camp wedding, plans were announced to spend $18 million at Camp in Franklin, Va., upping production with a new machine; at Savannah, a seventh Fourdrinier machine and increased pulping facilities. Bowaters Southern Paper Corp. cut ground for its 400-tons-a-day pulp mill at Catawba, S.C., cost: $38 million. Ecusta division of Olin Mathieson will add a tenth machine, its largest. Champion Paper & Fibre Co. started work on an expansion which will increase pulp production from 700 to 1100 tons a day and shove paper production from 700 to 1050, including an ultra-modern fine paper machine (2,000 fpm.). Bowaters completed installation of its third newsprint machine at Calhoun, Tenn., announced plans to spend $21 million on a fourth. Crown Zellerbach-Time Inc. began work for a $31 million coated paper mill at St. Francisville, La. Riegel Carolina is undergoing a $15 million face-lifting including a machine to make it an integrated operation and increasing pulp to 500 tons.

Other big jobs underway: Southern Pine Lumber Co.'s $4 million board mill at Diboll, Texas; International Paper's big $57 million newsprint and kraft mill at Pine Bluff; Dierks' mill, also in Pine Bluff, with a 166 in. machine; Container Corp. of America's $30 million mill at Brewton, Ala.; Marathon's $30 million mill at Naheola, Ala.; a $6 million face-lifting at Sonoco Products and $1½ million modernization at St. Regis' Pensacola mill. At I.P.'s Natchez mill, a multi-million dollar expansion included two new digesters. Gulf State's new bleached pulp mill at Demopolis was scheduled for summer start-up. At Jesup, Ga., Rayonier's new dissolving pulp mill was set for a November shakedown, and West Virginia Pulp and Paper's $22 million expansion program at Charleston, S.C., would be ready by mid-summer. At Mobile, I.P. got two new machines in operation, producing newsprint and kraft.

Still in the wind but not definite: Mead's site on the Savannah River in S.C.; Murphy Corp.'s site in Pine Bluff; Sutherland Paper Co. site in Richmond Co., Ga.; rumors of a new mill near Augusta, Ga.; Continental Can-Gair's new mill on the drawing board and the still-a-mystery location of the Tennessee Pulp & Paper Co.

SOUTH

ANNUAL WOODPULP CAPACITY

(in short tons)

1934	1,213,650
1939	3,399,170
1946	5,715,475
1949	7,496,004
1952	9,928,030
1955	12,458,547
1956	13,430,628
1957	14,780,786

From Bureau of Census data.

Big Increases In Capacity With New Units in Far West

—Portland, Ore.

Pacific Coast mills forged ahead in number of units, capacity and product quality. Annual capacity for woodpulp in this area reached 4,857,-684 tons in 1957, an increase of 340,-000 tons since a year ago. Practically every producer organization has undertaken or completed important projects during the past 12 months.

Two plants have already been completed this year, three will start producing within about six months, construction start for a pulp mill has been announced, and at least three other organizations have made known their plans for pulp mills.

Georgia-Pacific Corp. acquired an additional 8 billion feet of timber and associated timberland in Oregon and California. Its subsidiary G-P Paper Co.'s 250-ton kraft pulp-paper-containerboard mill at Toledo, Ore. is to start-up about the first of 1958. This plant is to operate essentially on residue wood from the parent firm's lumber and plywood mills.

Oregon Pulp & Paper Co., at Salem, and Columbia River Paper Mills, Vancouver, Wash., each rebuilt one machine producing fine papers, improving product quality and increasing capacity about 10%. Spaulding Pulp & Paper Co., Newberg, Ore., rebuilt its machine, increasing unbleached sulfite pulp to 150 tons per day and 200 ton potential.

In Alaska, Ketchikan Pulp Co. will be completing its $5 million "plant betterment" program this year. This includes a seventh digester.

Japanese sponsored Alaska Lumber & Pulp Co. has opened offices in Seattle and announced plans to start work this summer on its $55 million pulp mill near Sitka. Completion target is the end of 1959. Additional equipment at Puget Sound Pulp & Timber Co. at its Bellingham, Wash., plant will bulge production capacity by another 14,000 tons per year. Rayonier Inc. completed a new chlorine dioxide plant last year at its Port Angeles mill to provide additional bleaching. The Grays Harbor division has an entirely new steel-concrete woodmill.

Weyerhaeuser Timber Co. started up its new 400-ton per day MgO sulfite pulp mill at Grays Harbor, Wash., this spring. Completing expansion of the firm's Longview bleached paperboard plant in May '57, with start-up of Kamyr continuous digester, increased daily production by 100 tons daily. A chemical plant at Longview, to supply chlorine and caustic, began operations last December. Just a year ago (July '56) R-W Paper Co., owned 50-50 by Weyerhaeuser and Rhinelander Paper Co. (St. Regis), began production at Longview.

Diamond Match Co. will start production this summer in the pulp products section of its $15 million forest products plant at Red Bluff, Calif.

Planning Alaska Mill

Executives of Alaska Lumber & Pulp Co., happy over prospect of new Sitka, Alaska, pulp mill planned for construction upon completion of financing, possibly this summer. Pointing to aerial photo of site is Vice Pres. TAKUJI OHSHIMA. Onlookers (l to r) are Pres. TADAO SASAYAMA, Chief Engineer HAROLD CAVIN and Exec. Vice Pres. S. FUKUYAMA. Occasion for flowers and smiles was opening of new Seattle office. (PULP & PAPER photo.)

Fibreboard Paper Products Corp. increased paperboard converting by $6 million investment, including a new container plant at Antioch, Calif. An addition to the Sumner, Wash., container plant is being completed this year. Fibreboard will spend $50 million over a 5-year period beginning this 1957 to keep pace with markets in the region. Around four-fifths of the investment will increase pulp, paperboard and converting capacities.

AND MORE EXPANSIONS . . . Longview Fibre Co., Longview, Wash., has all but completed a major project expanding daily capacity by 250 tons, thus upping the plant into the 1,100-ton per day magnitude. Chip handling capacity was increased at this sulfate mill where salvaged residues account for 92% of wood requirements; a 260-ton pulp mill addition was completed; a new recovery furnace is being completed, a power boiler erected earlier this year is being followed this summer by a 25,600 kva turbogenerator; and the company's new No. 7 machine of 250 tons/day board capacity went into production.

Crown Zellerbach Corp. increased annual productive capacity by 175,000 tons during the past 12 months. The new 135,000-ton Antioch kraft paper mill which started up last fall accounts for the lion's share. The St. Helens plant was upped to 108,000 tons by a 13,000-ton increase from rebuilding No. 1 machine for milk container and butcher paper; capacity at West Linn also increased 13,000 tons (newsprint) to 236,000 tons; and the Camas plant, already upped to 272,000 tons as result of converting one machine from tissue to towelling for 11,500-ton increase, recently installed a new recovery boiler and a 300-ton kraft bleach plant is being completed this summer.

Waldorf Paper Products has its 250-ton per day kraft "noodle" pulp mill construction far enough along at Missoula, Mont., to become concerned about start-up; St. Regis Paper Co. acquired ownership in J. Neils Lumber Co., largest lumber producer in the state. J&J Rogers Co., of New York, has received a Forest Service time extension for constructing its mill at Silt, Colo. Prospects for two additional pulp mlls in Arizona are seen. Newly-formed Navajo Pulp & Paper Co., high bidder for 200,000 cords of USFS pulpwood at Winslow, plans a pulp mill there. Southwest Lumber Mills, of McNary and Flagstaff, has requested a sale offering of 6 million cords of pulpwood from USFS with view to supplying a possible 200-ton capacity pulp mill in the Taylor-Snowflake area. Arizona Pulp & Paper Co., existing mill, is adding a 75-ton newsprint and 35-ton board mill to its groundwood mill.

PACIFIC COAST STATES
ANNUAL WOODPULP CAPACITY
(in short tons)

1934	1,296,265
1939	1,659,430
1946	2,057,974
1949	2,578,964
1952	3,302,501
1955	4,152,828
1956	4,537,718
1957	4,857,684

From Bureau of Census data.

The number of hourly mill employes in the three Pacific Coast states continues to rise. Following are hourly employes in Washington, Oregon, and California mills:

1957	19,500
1950	15,500
1945	12,000
1940	10,000

A rise is noted in the industry's total Pacific states' man-hours, including management and overhead personnel, in the following data provided by Pacific Coast Assn. of Pulp and Paper Mfrs.

1956	47,223,923
1955	45,495,764
1953	42,500,000
1950	38,500,000
1947	32,500,000

Midwest Still Pioneers New Processes, Activities

—Chicago

In the Middle West and the Lake States, the pulp and paper industry keeps growing, though not at as great a pace as in the South and Far West. The highly valued, once scorned aspen tree has made the greatest difference.

The cooperative pool car shipping organization, an unusual one, for 36 Wisconsin paper mills and converters enjoyed the best year in its history in 1956, with 3,174 pool cars dispatched, carrying over 78,000 tons of paper products. This was nearly double the record of the mid-30's.

Carl A. Schreiber, general sales mgr., Nekoosa-Edwards Paper Co., became president of the Wisconsin Paper Group. John H. Wilterding, vice pres., Geo. Banta Co., is vice president; Leo O. Schubart, president of Neenah Paper, is secy.-treasurer, and Irwin Pearson is executive secretary.

The Wisconsin Roadbinder Assn. is another unusual body in this area, which has grown to the point where nine member mills are providing some 30% of their lignin production for the summer covering of roadways.

Record of Wisconsin Paper Group
35 Wisconsin Companies
Pool Car Shipments
(Selected comparative years)

	No. of Pool Cars Shipped	*No. of Tons Shipped*
1935	1,880	43,224
1940	939	65,758
1950	2,769	75,189
1955	3,025	78,859
1956	3,174	78,654

The Sulfite Pulp Manufacturers Research League, which has pioneered new methods of abating or using sulfite effluent, now has members from coast to coast instead of just in Wisconsin and Michigan, but its hub is still Appleton, Wis., with facilities adjacent to the Institute of Paper Chemistry.

Many of the most progressive activities in this industry sprouted in this Middle West—like the inter-company community relations programs now in vogue in all regions. The Institute at Appleton is the graduate school of the industry. A growing paper technology department at Western Michigan University has strong support of industry in that state. A new one is in the making at Miami University in Ohio. The Pulp and Paper Division at the U.S. Forest Products Lab in Madison, Wis., pioneered modern semi-chemical pulping and cold caustic soda pulping.

COATED PAPER CENTER . . . The pulse of the coated paper world beats strongest in this section of the United States. About one-third of all the coated paper in the nation—over 525,000 tons—is still produced in this area where the Massey-Consolidated letterpress type process, the Kimberly Clark-Mead letterpress process, Champion's doctor blade coater and Combined Locks coating methods, as well as lesser famed and older processes, got their start. Now the big news out of the Middle West is the successful trailing blade coater at Blandin Paper Co.

Consolidated Water Power & Paper Co.'s new on-machine coating machine at Biron, Wis., was started up this June 21, at 1,700 fpm, coating two sides. Kimberly-Clark recently started up another coated paper machine. Combined Locks has made changes and important additions at its mill. Coated paper for magazines only is expected to more than double in demand by 1975. Coating requirements for packaging has meanwhile increased phenomenally.

In Michigan much expansion is taking place, supported by new use

LAKE STATES
ANNUAL WOODPULP CAPACITY

(in short tons)

1934	1,363,535
1939	1,491,270
1946	1,725,733
1949	2,058,271
1952	2,315,722
1955	2,485,938
1956	2,619,214
1957	2,824,095

of hardwoods which grew over lands left bare by lumber "barons" of a past century. Allied Paper Mills has big plans in the Kalamazoo area, based on a semi-chemical pulp mill that it hopes to build right in the city limits. Watervliet Paper has a new semi-chemical plant for its printing papers stock. It just started up a new neutral sulfite recovery plant (new Mead process). American Box Board is more than doubling its production at Filer City, and S. D. Warren's Central Paper Division continues to expand. Huss-Ontanogan, Celotex and Abitibi are starting board production in the Northern Peninsula of Michigan.

MORE EXPANSION . . . At Nekoosa-Edwards, Nekoosa, Wis., a new 145 in. machine starts-up in 1958; two new digesters are being added. Thilmany Pulp & Paper Co., where expansion has seemed to be almost a chronic condition, is adding a 165 in. Yankee Fourdrinier and new boiler house. River Raisin Paper Co. will have a new container plant at Eaton Rapids, Mich. Kimberly-Clark again has expanded in cellulose wadding, with a new plant in Connecticut. Fort Howard Paper Co. started up No. 6, a 132-in. Yankee Fourdrinier, in 1957. Rhinelander Paper Co. is adding a $4,000,000 power plant.

Inland Container will build a new box plant in Chicago. Gardner Board & Carton, now part of Diamond Match, will spend $7,500,000 on plants in Ohio. Bergstrom Paper Co. has a fine new finishing plant east of Neenah and has merged with Whaley Safety Paper Co., neighboring specialty firm. Container Corp. of America is building a new container plant at Dolton, Ill. Crandon Paper Mills rebuilt and started up a long idle board mill, on wood instead of straw, its former raw material. No. 3 machine was rebuilt and speeded up at International Falls by Minnesota & Ontario Paper Co. Charmin Paper Products, division of Procter & Gamble, has added a new No. 5 digester and a Kamyr press. Federal Paper Board of New Jersey acquired Morris Paper Mills, in Morris, Ill., but no expansion was announced there. Most of Marathon's big expansion is in the South—rather than its Middle West mills, though a machine was recently added at its Northern Mills in Green Bay.

Ingenious Northeast Mills Unlock Hardwoods Door

—New York

"Don't ever sell the Northeast short. We may not be as spectacular as other regions, our progress may not be as pronounced right now, and we do have a well-known reticence about talking about ourselves. But whatever you do, don't underestimate us."

This is the composite of ideas of many key men you will find in the Northeast. These men resent being "written-off" in the "importance" picture of the industry.

For the most part they are optimistic. Being realists, they are sorry to see older, marginal mills close up shop. That could happen, they will tell you, to any mill that stops making progress while it tries to make paper.

The more optimistic will astonish you with statements such as, "Some day when the rat race for new mill sites has subsided in the South (and it has already), and cheap labor, lower taxes have been adjusted to other areas and when the bloom of being a big fish in a little pond has withered, you will see some of these same companies once again look to the Northeast."

PULP & PAPER has heard this often in field trips in Pennsylvania, New York and New England. Reasons given are the abundance of hardwood in the Northeast and the tremendous consuming population at hand (probably the highest per capita paper appetite in the world).

Now that the secret of the hardwood fiber has been unlocked by Hammermill, West Virginia Pulp & Paper and Gould for certain grades of pulps, PULP & PAPER's Eastern editor, after talking to pulp-paper men in this region and after traveling through these states, is personally optimistic.

Here's why. There are plenty of hardwood fibers in the Northeast. Some of it is on company-owned land. But for the most part, it is on privately owned farm lots. Farmer wood is cheaper than company-produced wood. The trick is to get it out of the woods to the mill. But by no means is there a wood shortage.

Hundreds of Northeast mills specialize, for the most part, in specialties. Their products, it may truly be said, still are made in the beaters.

In over 500 mills you will find New England conservatism still guiding modernization, improvement and expansion. A new suction roll here, new stock preparation equipment there. Perhaps it may be limited to a "rebuild" job. Taken collectively, what these 500 mills are doing adds up to a whale of a lot of modernizing.

Gould Paper Co., with its new hardwood-lease on life, is making history by its use of the Bauer chips-to-groundwood process for printing papers. Reportedly, the hardwood fibers are producing a better printing sheet than conventional groundwood softwood fibers. Diamond Match Co.'s Ogdensburg, N. Y., pilot plant using the Bauer process is virtually opening a new world for hardwood fibers in the use of molded pulp.

A quality-engineered new neutral sulfite pulp mill was being started up in mid-1957 at Glens Falls, N. Y. by Finch, Pruyn. Come Jan. 1958 Eastern Corp. expects to start operating its new 175-ton-a-day bleached kraft pulp mill at Lincoln, Me. This will be Maine's newest mill in a good many years.

This is not the whole picture. Each mill in the East is doing its share.

The old-time attitude of "it was good enough for father, and it's good enough for us," which ruined the textile industry here, never has had much of a hold on the pulp and paper industry. A healthy offset to this attitude is seen at Crocker, Burbank & Co, Assen., Fitchburg, Mass. In this cluster of mills with 17 machines, the fifth and sixth generations of the Crocker family, after 131 years, are busy operating and managing the mills themselves. They are now spending some $6,000,000 on two new machines, other new equipment.

NEW ENGLAND
ANNUAL WOODPULP CAPACITY

(in short tons)

1934	1,490,325
1939	1,096,160
1946	1,592,089
1949	1,655,041
1952	1,909,565
1955	1,972,983
1956	2,189,964
1957	2,266,324

From Bureau of Census data.

MIDDLE ATLANTIC STATES
ANNUAL WOODPULP CAPACITY

(in short tons)

1934	981,305
1939	1,096,160
1946	1,038,893
1949	1,229,533
1952	1,315,572
1955	1,337,193
1956	1,420,007
1957	1,429,642

From Bureau of Census data.

Newsprint in U.S.A.—Changes in 30 Years

This exclusive table on individual mills, prepared by PULP & PAPER, reveals how much of the U.S. newsprint industry "fled" from the country (to Canada) back in the 1920's. Congressional "investigations," newspaper attacks, refusal of Congress to provide a tariff for newsprint—these were influences of that historic "flight." In 1924—for the first time—Canada made more newsprint than U.S.A. In 1913, 65 U.S. companies made newsprint; by 1926 there were only 38, by 1946, just seven. Now 13 U.S. companies make newsprint regularly.

Newsprint again made the news in North America this past year. Notable was the still-to-be-accepted challenge hurled at U.S. newspaper publishers during a Congressional hearing by Robert M. Fowler, president of the Canadian Pulp & Paper Assn.

Referring to their continuous "crying" about unprofitable operations, Mr. Fowler asked to see some of the publishers' financial statements. This request went over like the proverbial lead balloon.

However, a recent publication of the *American Press* (June, 1957) presents an idea of how the small-town newspaper is doing. The verdict: not bad.

Scanning financial reports of 141 weeklies with circulation ranging from 3,700 to 17,700, some 42 were selected as perfect representatives. Profit before taxes averaged 15.8%. Paper, ink and other materials averaged 14.9%.

Of all the various paper grades slated for capacity increases, newsprint may well be one that is entirely on safe grounds. Newsprint capacity is slated to rise from 1,531,000 tons (1955) to around 2,469,000 tons, an increase of around 60%, some 938,000 tons.

America's appetite for newsprint rose from 6,638,000 tons in 1955 to around 7,123,000 tons in 1956 as per capita consumption rose from 80.8 lbs. to 82.1 lbs.

An interesting commentary on newsprint appetites, contrasting the average Gothamite's use with that of the rural dweller, was made during Paper Week by Fred Edwards, advertising manager of American Cyanamid. Mr. Edwards guesstimated that the person who buys a copy of the New York *Times* daily and the Sunday edition probably would use his 435 lbs. (average U.S. per capita consumption of all paper) right there. In addition, he conjectured, most New Yorkers buy two papers a day. Yet many New Yorkers do not read two papers. Moral: Big potentials for further paper consumption are not only in rural, undeveloped regions—but also in metropolitan sections.

The resurging U.S. newsprint industry has taken several "second looks" at the wisdom of bringing in more newsprint capacity. Some plans have been shelved temporarily, others permanently. The 100-ton-a-day newsprint mill slated at Silt, Colo., for J&J Rogers Co., is now questionable. A 250-ton a day newsprint mill, contemplated by Hudson Pulp & Paper Co., has been cancelled. A new newsprint machine at St. Croix Paper Co. at Woodland, Me., is scheduled for start-up sometime this summer.

The estimated total 1957 capacity of 1,931,000 tons as shown in the data collected by PULP & PAPER is within less than 1% of the Newsprint Service Bureau's estimate. The slight discrepancy is due to variations in mill reports.

COMPANIES PRODUCING NEWSPRINT IN U.S.A.

Especially prepared by PULP & PAPER (Copyright by PULP & PAPER)

	1926	*1946*	*1952*	*1955*	*1956*	*1957*
			Tons, Estimated Capacity			
Alexandria Paper Co.	15,000	—	—	—	—	—
Algonquin Paper Co.	29,000	—	—	—	—	—
Blandin Paper Co.	22,000	—	—	—	—	—
Bowaters Southern Paper Corp.	—	—	—	135,000	180,000	300,000
Cliff Paper Co.	13,000	—	—	—	—	—
Consolidated Water P. & Pa.	102,000	—	—	—	—	—
Coosa River Newsprint Co.	—	—	115,000	130,000	140,000	140,000
Crown Zellerbach Corp.	174,000	200,000	210,000	210,000	240,000	255,000
Cushnoc Paper Co.	20,000	—	—	—	—	—
De Grasse Paper Co.	56,000	—	—	—	—	—
Dells Pulp & Paper Co.	12,000	—	—	—	—	—
Escanaba Paper Co.	170,000	—	—	—	—	—
Finch, Pruyn & Co.	44,000	10,000	—	—	—	—
Flambeau Paper Co.	14,000	—	—	—	—	—
Gary Paper Mills, Inc.	—	—	10,000	—	—	—
Gilman Paper Co.	17,000	—	—	—	—	—
Gould Paper Co.	30,000	—	—	—	—	—
Grandfather Falls Co.	11,000	—	—	—	—	—
Great Northern Paper Co.	257,000	300,000	375,000	450,000	520,000	560,000
Great Western Paper Co.	20,000	—	—	—	—	—
Hennepin Paper Co.	12,000	—	—	—	—	—
High Falls Pulp & Paper	8,000	—	—	—	—	—
Inland Empire Paper Co.	29,000	—	20,000	22,000	22,000	23,000
International Paper Co.	323,000	—	—	—	25,000†	115,000†
Maine Seaboard Paper Co.	—	104,000	—	—	—	—
Manistique Pulp & Paper	20,000	—	25,000	7,000	8,000	8,000
Minn. & Ontario Paper Co.	76,000	—	—	—	—	—
Neekoosa-Edwards Paper	10,000	—	—	—	—	—
Northwest Paper Co.	14,000	—	—	—	—	—
Oswegatchi Paper Co.	16,000	—	—	—	—	—
Oswego Falls Corp.	11,000	—	—	—	—	—
Pejepscot Paper Co.	41,000	—	35,000	35,000	35,000	25,000
Publishers Paper Co.	9,000	56,000	80,000	93,000	100,000	105,000
St. Croix Paper Co.	55,000	75,000	90,000	93,000	100,000	110,000
St. George Paper Co.	10,000	—	—	—	—	—
St. Lawrence Paper Co.*	—	—	30,000	25,000	25,000	20,000
St. Regis Paper Co.	115,000	—	—	—	—	—
Sherman Paper Co.	16,000	—	—	—	—	—
Southland Paper Mills	—	55,000	135,000	140,000	175,000	205,000
Tidewater Paper Mills	32,000	—	—	—	—	—
Watab Paper Co.	17,000	—	—	—	—	—
Waterway Paper Prod. Co.	14,000	—	—	—	—	—
West End Paper Co.	13,000	—	—	—	—	—
West Tacoma Newsprint Co.	—	—	25,000	60,000	60,000	65,000
Wisconsin River Paper & Pulp	25,000	—	—	—	—	—
TOTAL	1,739,000	820,000	1,150,000	1,400,000	1,630,000	1,931,000

**Former St. Regis mill at Norfolk, N. Y.*
†Mobile

A SPECIAL FEATURE OF THIS REVIEW NUMBER

Annual Pulpwood Review . . .

Total U.S.A. receipts hit a record 37,176,000 cords in 1956, up 13.1% from the 1955 figure of 32,879,000 cords. Consumption was up 7% to 35,755,000 cords. First quarter 1957 production of over 9,000,000 cords was very close to the 1956 first quarter. Half of this production is in the South. Canada also set a record, with production about half that of the United States. Inventories are a little higher this year, but not considered as serious or in any way dangerous.

"High level" forecasts which the U.S. Forest Service made about future pulpwood needs of 1975 and 2000 A.D., regarded by many as too fantastic to consider seriously, now appear to be very realistic—easily attainable.

At any rate, there should be plenty of wood. It is estimated there are 100,000,000 cords of salvageable timber in the Far West. In the South, logging residues alone could supply half the present pulpwood needs.

Close observers say the 1957 rate of cutting may be too fast in many areas for softwoods, but hardwoods can be used to a much greater extent than at present. Pulps and papers of all qualities are being made from hardwoods. At the present pace, the softwood cut could exceed growth by 1975. No such danger is foreseen even in much greater use of the faster growing hardwoods.

Here's how each PULP & PAPER editor reports developments and outlook in his region:

U.S.—THE SOUTH:

Dixie Is the "Big Muscle"; Minds Open to New Ideas

Atlanta

Dixie was again the nation's big muscle in pulpwood production in 1956, setting a new record: 19,685,-236 cords, a 900,000 cord increase over 1955's official record crop. How big does that make pulpwood in the South?

Well, in one state where cotton was once king, the pine tree is now crown prince and a close rival as the most important crop. In another, production of pulpwood contributed no less than $27 million to the economy of the state. One paper company reported it paid out $704,000 for wood in one single Georgia county. An agency estimated that a single pulpwood truck operating in a community represents a $22,500 a year annual business.

Minds were more wide open than ever. The hunger for new reports on equipment and methods was ravenous. Ideas once tabooed as "too hard on the pocketbook" or "Rube Goldbergish" began finding disciples. Example: At an APA meeting, APA Logging Engineer Jim Holekamp came up with his idea of "an ideal land clearing machine."

Commented one woodlands manager: "When you can get guys thinking like this, you can do anything."

The Chips Are Down . . .

Perhaps the most controversial subject in the Southern pulpwod industry last year was the sawmill chip. Whereas one mill satisfied up to 25% of its demands with waste chips, another steadfastly refused to buy them. Major objection: Poor quality chips, too much bark. Nonetheless, the switch to the chip was phenomenal. In 1955, less than 300,000 cord-equivalent of chips went into Southern paper mills. Official report for 1956: 543,771 cords. An even sharper increase is evidenced for next year.

Increased attention was paid to this field by suppliers. Carthage and Soderhamn both developed new slab debarkers, got them on the market. Jackson Industries put a new type log debarker into a Georgia sawmill for three months, took it back to the plant to make changes based on what was learned in actual operation. In Lancaster, S.C., Carl W. Mullis, a sawmill operator, designed a new hydraulic log barker on which APA man Holekamp reported: ". . . the outstanding feature of this debarker is the air reservoir within the rotary debarking ring which assures a constant debarking tool pressure regardless of changing log diameters . . . stored air exerts pnuematic pressure upon each piston of the four self-opening, debarking tools and assures satisfactory bark removal results."

Setting Sights On Sites . . .

Site preparation got a real shot in the arm during the year. Once a "raised eyebrow theory," site prepara-

PULPWOOD PRODUCTION STATISTICS FOR SOUTHERN STATES

(in cords)

Especially gathered and prepared by PULP & PAPER from U.S. Forest Service data.

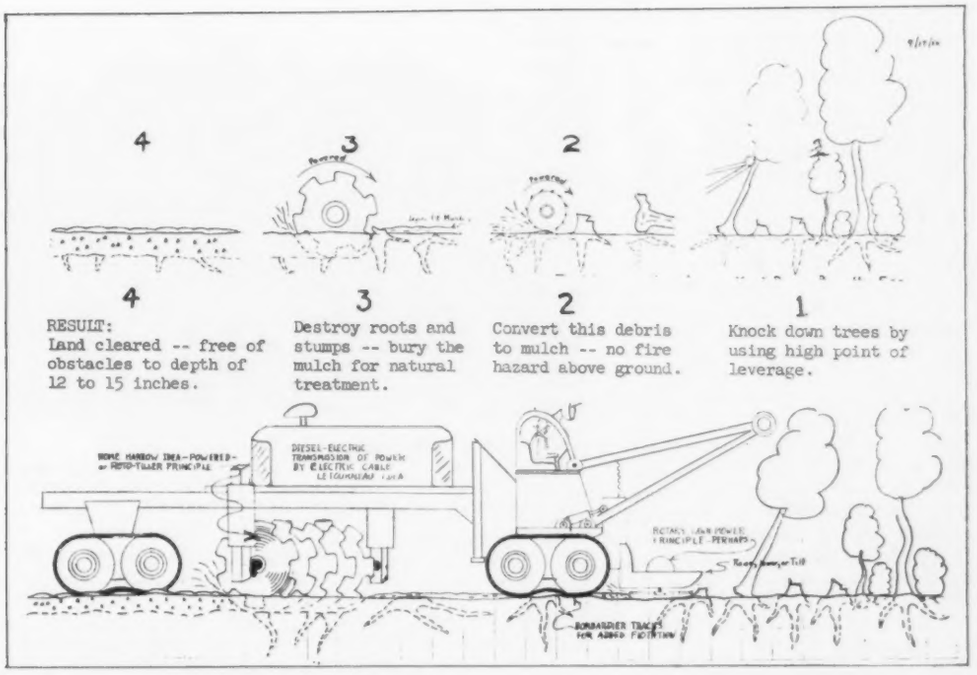
	Virginia	*North Carolina*	*South Carolina*	*Georgia*	*Florida*	*Southeast Total*
1946	971,000	709,000	1,002,000	1,143,000	865,000	4,711,000
1947	1,025,400	765,200	948,400	1,215,200	881,700	4,835,900
1948	1,306,500	926,200	1,108,500	1,770,600	1,221,200	6,330,000
1949	895,200	802,100	1,012,200	1,790,500	1,036,100	5,536,100
1950	1,044,147	1,024,005	1,182,413	2,221,279	1,384,694	6,856,538
1951	1,326,333	1,304,540	1,251,045	2,370,143	1,490,325	7,742,386
1952	1,069,129	1,332,303	1,275,698	2,513,272	1,583,341	7,773,743
1953	1,267,347	1,528,929	1,446,157	2,879,168	1,674,864	8,796,465
1954	1,258,400	1,507,400	1,330,900	3,057,500	1,661,600	8,815,800
1955	1,406,320	1,573,972	1,513,313	3,759,540	1,828,541	10,081,686
1956	1,629,706	1,842,162	1,806,162	3,849,942	1,950,653	11,079,034

	Oklahoma	*Texas*	*Arkansas*	*Louisiana*	*Southwest Total*
1946	13,300	616,000	577,000	787,000	1,993,000
1947	29,900	711,100	596,600	870,300	2,207,900
1948	34,300	823,600	616,700	953,800	2,428,400
1949	37,900	790,900	561,300	759,800	2,149,900
1950	38,831	922,304	603,682	883,306	2,448,123
1951	44,618	1,158,371	613,792	1,110,961	2,927,742
1952	34,870	1,159,918	619,664	1,234,745	3,049,197
1953	41,028	1,210,704	780,982	1,375,500	3,408,214
1954	33,000	1,054,300	826,300	1,504,200	3,417,800
1955	38,073	1,203,775	876,999	1,650,152	3,768,999
1956	74,535	1,459,015	934,734	1,574,218	4,042,502

	Tennessee	*Mississippi*	*Alabama*	*Total Mid-South*	*Total All-South*
1946	135,000	1,238,000	756,000	2,130,000	8,844,000
1947	141,300	1,279,100	777,700	2,198,100	9,241,900
1948	181,700	1,433,900	981,900	2,597,500	11,358,900
1949	158,100	1,167,700	911,300	2,237,100	9,923,100
1950	143,958	1,665,863	1,321,204	3,131,025	12,435,686
1951	191,415	1,793,376	1,406,207	3,390,998	14,061,126
1952	268,438	1,861,388	1,608,609	3,738,435	14,561,375
1953	234,162	1,922,975	1,765,140	3,922,277	16,126,956
1954	240,300	1,963,800	1,831,900	4,036,000	16,269,600
1955	326,634	1,908,495	1,928,828	4,163,957	18,014,642
1956	392,156	2,069,033	1,601,466	4,062,655	19,685,236

Note—Because of rounding, state figures may not add up to totals.

Sources: Southern and Southeastern Forest Experiment Stations of U.S. Forest Service.


4
3
2
4
RESULT:
land cleared -- free of obstacles to depth of 12 to 15 inches.
3
Destroy roots and stumps -- bury the mulch for natural treatment.
2
Convert this debris to mulch -- no fire hazard above ground.
1
Knock down trees by using high point of leverage.
DIESEL-ELECTRIC TRANSMISSION OF POWER BY ELECTRIC CABLE
BOMBARDIER TRACKS FOR ADDED FLOTATION

Land-Clearing Machine Of The Future?

APA Southern Logging Engineer Jim Holekamp introduced this "ideal land clearing machine" at Southern meeting, found surprising reception. One reservation: That initial cost of machine be no consideration as long as cost per acre is in line, tempo of putting idle forest lands back in action reaches satisfactory level. Machine could travel highways, requires only one man to do whole job in one pass.

tion is coming more and more into its own. An entire Southeastern APA meeting was devoted to the subject of site prep. A gigantic demonstration sponsored by Brunswick Pulp & Paper and Caterpillar Tractor Co. attracted 350 woodsmen (See PULP & PAPER, May 1957: "Experiment in Site Preparation"). Florida-Georgia Tractor Co. put its International-Harvester machinery on a three month tour of Southern mills, preparing land for tree planting.

To some companies like Rayonier and St. Regis, site prep is not new. Rayonier tried it first as an experiment for two years, was so pleased with results that they are now on an annual schedule (9,000 acres in 1957, another 9,000 acres in '58). At St. Regis, site preparation is an integral part of its intensive forest management program (See PULP & PAPER, June 1957, "St. Regis Goes Around in Circles").

U.S. SOUTH—PULPWOOD
Receipts—Consumption—Inventories

(In thousands of cords)

Yr.	*Receipts*	*Consumption*	*Yr. End Inventory*
1941	6,400	6,227	334
1943	6,505	6,342	293
1945	7,153	7,208	145
1947	8,227	8,395	291
1949	9,060	9,255	670
1950	11,543	11,480	753
1951	12,844	12,854	772
1952	13,381	13,330	856
1953	14,959	14,752	1,089
1954	14,962	15,014	1,048
1955	18,708	19,027	921
1956	20,582	20,203	1,325

Source: Bureau of the Census; except 1941-1943, by War Production Board; 1951-52—NPA, Pulp, Paper & Board Div.

What Else Was New? . . .

There were better efforts toward public relations than ever before. There had to be—several state legislatures threatened anti-industry laws. Example: A law limiting the amount of land a corporate group can own to 10,000 acres. To offset one-sided reports, the industry actively began telling its story. The Southern Pulpwood Conservation Association sponsored a series of highly successful "get acquainted" meetings in Southern paper mill towns. Bowaters Southern started its own newspaper designed to give tips to tree farmers on fire control, planting and caring for seedlings, reforestation.

Every state in the South plans to grow more seedlings this year than ever before. Florida continued to be king, producing 56 million seedlings, Georgia was second with 52 million. Nor were hardwoods ignored. Tests on the pulping of hardwood are presently being conducted in a special laboratory built by one Southern mill.

U.S. NORTHEAST:

With Hardwoods, Industry Says "In Business Again"

New York

This land that once esteemed conifers and despised, even girdled, hardwoods, is now having a terrific love affair with hardwoods. The wintry night of (long) fiber scarcity is over and (short) fiber abundance is here again. The whirr of the chain saws and the roar of the tractors are heard in the hardwood land. Jubilant pulpwood managers will tell you, "We're in business again."

Hammermill Paper Co., long-time importer of softwood from Canada (an expensive operation), is now happily reaping a hardwood harvest within 150 miles of its Erie, Pa., mill; eyes a hardwood-surrounded site in Pennsylvania for a second pulpmill. With its Neutracel process, Hammermill is producing new fiber for its fine papers, likes Neutracel so much it is doubling capacity from 100 tons a day to 200.

East of Hammermill are the Johnsonburg and Lock Haven mills of New York & Pennsylvania Co., Inc., which have been using hardwoods for soda pulping since the early 1900's. At Lock Haven experiments are still underway evaluating hardwood fibers

for neutral sulfite semichemical pulp for fine papers.

Gould Paper Co., which a few years ago estimated its softwood supply as adequate for 50 years, later drastically revised this figure to 10 years after a hurricane blowdown. The future looks bright again to President Ralph Leuthi after samples of the company's paper were evaluated by a large printer as "your best production yet." The process: Bauer Bros. chips-to-groundwood pulping.

Encouraged by Gould's success, Diamond Match Co. has set up a pilot plant at its Ogdensburg, N.Y. operations to evaluate Northern hardwoods. Preliminary results are good, says the company.

One significant development has been stimulated by West Virginia Pulp and Paper Co. The pulpwood pallet, long-time Southern favorite, has been modified (turned around sideways—three pallets fit into space of two) and improved (made of wood instead of metal).

Southern Pallet Moves North
This modification of metal frame pallets to wooden units turned around sideways permits greater pulpwood payload. In Northeast states, where wood is heavier, pallet helps make pulpwood production more appealing to small farm producers.

New Methods . . .

The pallet mechanizes the "little man," an important producer in West Virginia's pulpwood picture; for its Mechanicville, N.Y. mill depends 100% on farmer produced wood—all hardwood. The pallet takes the backbreak out of pulpwood production—makes it more appealing to the farmer. Producers using the pallet were interviewed by PULP & PAPER, say the pallet will be seen all over in a few years.

A tremendous impetus to sawmill residues is being given by a one-man program recently launched by John Eaton, president, Eaton Lumber Co. Ordinarily, small sawmills cannot economically supply chips to pulp mills because of their low production rate and the cost of debarkers. Mr. Eaton has deveoped a low-cost round log debarker which now permits small sawmills to get in on the chips-to-pulp mill act.

He has taken his operation a few steps further, installs his debarkers at small sawmills for installation cost (around $4,000), lets the operator pay off cost by a $1 per ton rate of (debarked) slabs.

Slabs are then trucked by a group of five to six sawmills to a concentration yard where they are chipped and stored, then shipped to a pulp mill. Three of these slab-to-chip concentration yards are now in action, a fourth is being built. A full report on this system was featured in PULP & PAPER's May 1957 issue.

There's a tremendous potential of farmer wood in the Northeast. For instance, Bob Whyland, woodlands manager, Finch, Pruyn & Co., Inc., says there's about 10 million cords within 50 miles of Glens Falls, N.Y., on 750,000 acres of private land. Most of it is too poor for sawtimber, ideal for pulpwood, he says. There's an additional three million cords of hardwood pulpwood on their own land, he estimates. That's why Finch, Pruyn is about to start up its new neutral sulfite pulp mill at Glens Falls.

Great Northern Paper Co., champion of the Chemigroundwood process, has probably the greatest concentration of equipment for harvesting hardwood and softwood on its 2.25 million acres of forest lands in Maine. "The Northern" recently purchased 16 International Harvester TD-9 crawlers for its woodland operations.

NORTHEAST AND NORTH CENTRAL STATES PULPWOOD STATISTICS*

(*In Thousands of Cords*)

	Receipts				
	Domestic	*Imports*	*Total*	*Consumption*	*Yr. End Inventory*
1941	3,630	1,269	4,899	4,935	1,657
1945	3,676	1,101	4,777	4,689	1,075
1947	4,571	1,163	5,734	5,425	2,147
1949	3,869	1,004	4,873	5,009	1,861
1950	3,940	1,060	5,000	5,497	1,300
1951	5,097	1,586	6,683	6,139	1,850
1952	4,881	1,422	6,303	5,724	2,260
1953	4,677	1,025	5,702	5,670	2,035
1954	4,643	1,095	5,738	5,805	1,640
1955	6,273	1,400	7,673	7,845	2,690
1956	7,265	1,477	8,742	8,351	3,095

**Prior to 1955 the figures are for regions which the Census Bureau and War Production Board designated as Northeastern and Appalachian.*
Source: Bureau of the Census.

U.S. PACIFIC COAST:

Consumption Up by 11%; Sawmill Chips Set Record

Portland, Ore.

The Pacific Coast mills increased pulpwood acquisition in 1956 by 20.8% over 1955 to 7,852,000 cords. They increased consumption by 11% and had a year-end inventory of 1,808,000 cords, up 55% from a year previous. Pulpwood imports, however, fell off to the extent of 34,000 cords, a 6% reduction from 1955. This decrease can be at least partially attributed to a growth of the industry in British Columbia and its resultant increased wood requirements. Hence Canadian pulpwood which might otherwise have been marketed in Pacific Coast states was used for domestic consumption.

Also relating to this "across the border" movement of raw-product wood, the production of pulp chips from lumber and veneer residues increased extensively in Oregon and Washington where practically all mills —both sulfite and sulfate—are important users of wood wastes.

The West Coast sulfate pulp industry is largely dependent on utilizing waste woods. New mills and prime expansions of recent years rely extensively or wholly on chips made from wood residues. Even those mills which originally obtained raw product wood as logs have become important

chip customers. Mills which only a few years ago purchased no chips are now obtaining around 50% raw-product wood in this form. Of the mills which did acquire chips at that time, some now use residues for over 90% of their wood requirements and in at least one such plant this use falls just short of 100%.

More Waste Wood Chips . . .

Although prices and production of both lumber and plywood waned during the past 12-month period, pulp chip production has been exceptionally high. Though not currently supportable statistically, more chips were produced from mill residue wood on the Pacific Coast during 1956 than in any previous year. The factor of decreased lumber-veneer output is at least partially compensated for by the fact that because of lower prices and eased demand for lumber increased amounts of the lower grades were converted into chips rather than to boards. Beside, additional mills installed facilities during the past year to produce and handle pulp chips.

Total pulpwood obtained from cull and salvage logs and mill residues during 1956 just in the Douglas fir region of Oregon and Washington (between Pacific Ocean and Summit of Cascade Range) is estimated at 1¼ billion feet, log scale.

Never before has wood utilization been as good as it is today, a factor which has stretched the region's effective timber supply "by no less than 100 billion board feet."

During the past 10 years the average price of Douglas fir timber sold by USFS increased approximately 250%.

Washington state still is far and away the biggest pulpwood producing state in the nation. It cut enough pulpwood in 1955 (last figures available on states) for 2,710,906 tons of woodpulp.)

U.S. PACIFIC COAST—PULPWOOD
Receipts—Consumption—Inventories

(*In Thousands of Cords*)

Yr.	Receipts			Consum.	Yr. End Invent.
	Domestic	*Imports*	*Total*		
1941	2,585	332	2,918	3,019	742
1943	2,458	103	2,561	2,271	491
1945	2,470	126	2,596	2,472	420
1947	3,581	156	3,734	3,171	974
1949	3,015	148	3,162	3,199	1,031
1950	3,244	287	3,531	3,822	772
1951	4,565	261	4,826	4,490	1,070
1952	4,339	155	4,494	4,499	1,133
1953	4,463	—	4,463	4,692	1,108
1954	4,924	—	4,924	5,425	959
1955°	5,967	531	6,498	6,484	1,166
1956°	7,355	497	7,852	7,201	1,808

Source: Bureau of the Census; except 1941-1943, by War Production Board; 1951-52 —NPA, Pulp, Paper & Board Div.
°Includes Alaska

U.S. MIDDLE WEST:

500,000 More Cords Cut; Big Swing to Hardwoods

Chicago

The swing to hardwoods continued at a faster pace than in any previous year in the Middle West.

The production of pulpwood set a new all-time high record in the Middle West in 1956 and the increase over the previous year was about an equal match to the increase that took place in 1951 (Korean War) and in both years the bulk of increase was in hardwoods.

Figures are compiled for the three principal states producing pulpwood in this area—Minnesota, Wisconsin and Michigan—by the Lake States Forest Experimental Station, U.S. Forest Service, St. Paul. These show a total pulpwood production in the three states of 2,992,000 cords, which is 588,000 cords more than in 1955. The only year of a comparable increase was in 1951, when production jumped 705,000 cords after a period of decline that followed World War II.

Of this increase, use of aspen went up 307,000 cords in 1956, to 1,397,000, which is twice what the production of aspen was back in the years 1946 to 1950. In 1956, production of spruce pulpwood was 425,000 cords in the three states, of balsam, 304,000 cords, of pine, 377,000, of hemlock, 144,000, and of miscellaneous species, 256,000. The latter increased 100,000 —showing more hardwood uses. The other species showed about the same production as their averages for the past decade.

Prices . . .

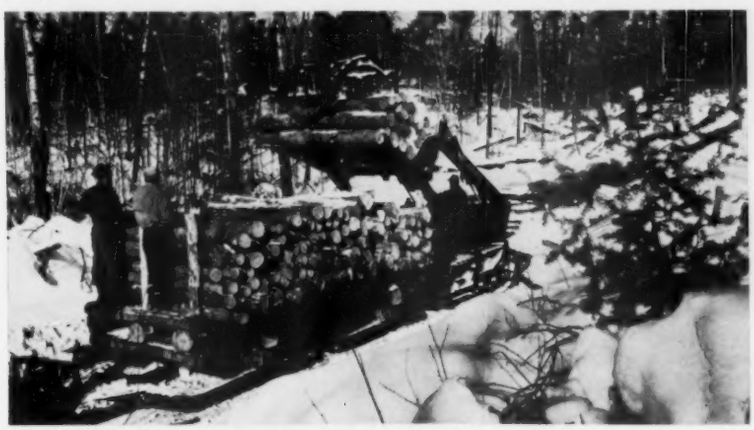
The extension Forestry Office, College of Agriculture, University of Wisconsin, reports that recent prices per cord for pulpwood delivered to mills in this area are: $12 to $15 for rough aspen, $20 for peeled aspen; $18 for rough pine; $23 for peeled pine; $19-$20 for rough hemlock; $24.50 to $25 for peeled hemlock; $26 to $27.50 for spruce rough, and $31 to $32.50 for peeled spruce. Mixed hardwoods were 14.50 rough and $21 peeled. F.o.b. car prices average $1 to $1.50 less. Prices were continuing strong. Stumpage prices for aspen were $1.70 to $3 a cord and for spruce $6 to $9.

Except for imported spruce, Wisconsin is considered quite self-sufficient today in its future pulpwood resources. Big expansion in production is taking place in Michigan.

Big Boom in Michigan . . .

Several new mills in Michigan will be doubling the consumption of pulpwood in that state, using the remarkable resources of hardwoods which have covered hundreds of miles of land which had been depleted by the 19th century lumber industry. The faster growing hardwoods insure paper and board supply for the future.

The Procter & Gamble (Charmin) subsidiary mill at Cheboygan, Mich., will be using about 10,000 cords a year. The Alpena, Mich., hardboard mill of the Canadian Abitibi interests

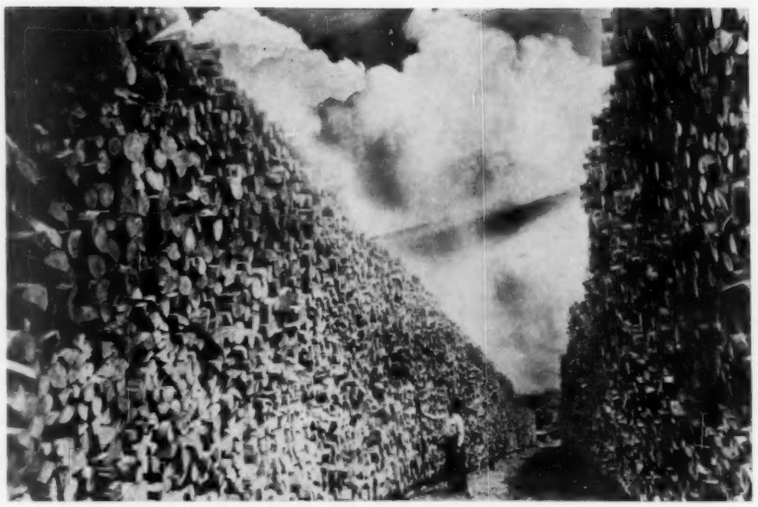


More Efficiency in Woods
One way to combat rising wood costs is with higher efficiency and greater mechanization. This Drott Skid-Loader does a good job for Minnesota & Ontario Paper Co.

will use from 85,000 to 100,000 cords annually—all kinds of hardwood except tamarack, and pine, too.

There is a new pulpwood purchasing point at Claire, Mich., for Watervliet Paper Co., subsidiary of Hammermill Paper Co., which is making semi-chemical pulp for its coated book and litho papers, replacing purchased pulps. Celotex Corp. will be making its special board at L'Anse, Mich., using hardwoods. Another new producer, Huss-Ontanogan Pulp and Paper Co. has rebuilt the old mill at Ontanogan, Mich., to make semi-chemical board using hardwoods. American Box Board at Filer City, Mich., is jumping its pulpwood consumption from 90,000 to over 200,000 cords a year, with a new machine. This mill has two Cambio (Soderhamn) debarkers in use and has ordered a third and also added a new Impco debarker, so are going into mechanical debarking in a big way.

There is a continuing increase of pulpwood consumption in Minnesota and Wisconsin and Ohio. The new Crandon semi-chemical board mill at Fort Madison, replacing a dismantled straw board mill, gives that state two mills using pulpwood. Waldorf Paper Co., St. Paul, Minn., has an Impco debarker in operation at Bagley, Minn.



Towering Stacks of Pulpwood in Lake States
In yard of Escanaba, Mich., mill, of Mead Corp. subsidiary company.

Reforestation . . .

A significant Midwest development in reforestation is that Kimberly-Clark has opened up a new industrial all-spruce nursery at Loretto, Mich., under the direction of C. A. Samuelson, who heads up Kimberly-Clark of Michigan, Inc. Capacity will be in the neighborhood of 200,000,000 (2-2) seedlings per year. The 2-2 interpretation means that the seedlings will spend two years in the seed bed, and then two years in the transplant bed. Most of the nurseries now are not raising spruce in the Lake States. Rhinelander Paper Co. is also developing a new nursery.

Wood costs are expected to increase in Minnesota because of legislation which increases the workmen's compensation program, and overall the worker's fringe benefits have been increased.

There is a problem of management of second growth hardwoods. Once they cut the trees, then they have to figure out how to manage the second growth timber. To solve this problem, most Lake States pulp and paper companies are putting on cooperative foresters to work with the small woodlands owner, and American Pulpwood Association, Timber Producers Association, Trees for Tomorrow, the United States government, and Michigan, Minnesota and Wisconsin Conservation commissions are cooperating with industry in this problem of management of second growth hardwoods. These groups have asked APA to compile a book on management of second growth hardwoods. H. M. Shepard, Lake States logging engineer, is putting together this and others in APA are working on it.

Chemical debarking of aspen is being used by several companies, employing a hormone type chemical called Debark developed by American Chemical Paint Co.

Mechanization . . .

There have been several developments in light dray loaders for strip cut pulpwood. Power saws have become universally adopted as a necessary tool with the lighter one man saw the most popular.

There has been an increase, in truck and tractor mounted loaders, such as the Hiabob loader of Ely, Minn. and also the Hopto loader, manufactured by Badger Machine Co. of Winona, Minn.

There has been great acceptance of light wheel tractors coming into the pulpwood operations. More companies are trying to further mechanize wherever they can.

PRODUCTION OF PULPWOOD IN THE LAKE STATES BY STATES

Production in thousand cords (rough wood basis)

Year	*Lake States Region*	*Minnesota*	*Wisconsin*	*Michigan*
1946	2,250	977	428	845
1947	2,037	852	493	692
1948	2,184	988	468	728
1949	1,552	606	427	519
1950	1,872	748	468	656
1951	2,577	1,077	565	935
1952	2,281	937	582	762
1953	2,091	813	554	724
1954	2,325	837	691	797
1955	2,404	885	710	809
1956	2,992	1,066	960	966

Source: Lake States Forest Experiment Station, U. S. Forest Service.

PRODUCTION OF PULPWOOD IN THE LAKE STATES BY SPECIES

Production in thousands of cords, by species (rough wood basis)

Year	*All Species*	*Spruce*	*Balsam*	*Pine*	*Hemlock*	*Aspen*	*Misc.*
1946	2,250	417	257	493	314	713	56
1947	2,037	390	311	509	199	575	53
1948	2,184	436	400	493	182	625	48
1949	1,552	320	319	273	108	486	46
1950	1,872	315	318	346	131	694	68
1951	2,577	420	348	545	220	935	109
1952	2,281	452	391	347	191	820	80
1953	2,091	322	248	356	122	939	104
1954	2,325	386	311	370	125	1,006	127
1955	2,404	399	289	377	94	1,090	155
1956	2,992	425	304	466	144	1,397	256

Source: Lake States Forest Experiment Station, U. S. Forest Service

Growing Fields for Woodpulp, Other Fibers

Insulation Board
Hardboard

Particle Board
Flake Board

Cinderellas in the woodpile are becoming more common.

New ones to make their debut are particle board and flake board, made from unpulped wood leftovers. Hardboards and insulating boards have been booming along, too. These offer expanding outlets for low grade fibers and slabs, edgings, trim and shavings from the sawmills.

The Stanford Research Institute Report, "America's Demand for Wood," in appraising the future of the building board industry, considered only hardboard and insulating board. The significance of the newest Cinderella, particle board, had not been fully appreciated when the report was in preparation in late 1953 and 1954.

However, the Institute stated that consumption of building board had grown more than tenfold since 1929.

Looking ahead, the Institute Report predicts that by 1975 insulating board, the longest in production of the board products, will account for about 34% of the market for exterior wall sheathing material, contrasted to 4% in 1920. This gain will be made largely at the expense of lumber. Greater quantities will be consumed, too, for use as facing material on interior walls and ceilings.

Hardboard, which started production about 10 years after insulating board, is widely used by the furniture and fixtures industry. It is enjoying accelerated usage by the construction industry because of its relatively low cost and adaptability.

Looking ahead to 1975, the Institute predicts that a total of slightly over 3,000,000,000 sq. ft. (⅜ in. equivalent) of hardboard will be used in all categories.

Particle Board Industry . . .

Particle board actually did not appear on the commercial market until about 1946. Its growth has been spectacular. In West Germany alone, for instance, volume of board produced has increased from approximately 4½ million sq. ft. in 1950 to 75 million sq. ft. (⅜ in. basis) in 1955. There now are about 35 plants in West Germany, three in England and several in Switzerland.

About 50 wood particle board plants are either producing or are being built in the U.S. Announcements for new plants are still being made. Total productive capacity of the 50 plants, when in operation, will be nearly one billion sq. ft. annually (based on ⅜ in. thickness equivalent). That compares with present estimated annual production of 3 billion sq. ft. (½ in. basis) of insulation board and 1.75 billion sq. ft. (⅛ in. basis) for hardboard.

Particle board is essentially a product consisting of machined wood particles, splinters, flakes and shavings of a controlled moisture content and size, bonded together with a synthetic resin adhesive into panel form under pressure and heat.

Most extensive use for particle board is as furniture core stock for both high-pressure laminates and hardwood veneers. It threatens to supplant a long established competitor, edge-glued lumber cores.

Insulation Board . . .

The insulation board industry started in the United States in 1914 by Minnesota and Ontario Paper Co., at International Falls, Minn. Celotex Corp. and Wood Conversion Co. soon followed with plants at Marrero, Miss., and Cloquet, Minn. Now 17 companies now operate a total of 20 plants producing 3 billion sq. ft. of board per year (½ in. basis).

Many pulp and paper makers have gone into this field because of similarity of processes.

Although wood is the major raw material for insulation boards in the United States, there are exceptions. Celotex uses a blend of bagasse fiber and waste paper. Pioneer Flintkote uses all bagasse. Homasote Co. uses repulped newsprint with 15% of commercial sulfite pulp to improve the stock. The Dubuque, Ia., plant of Barrett Division, Allied Chemical & Dye Corp., uses some flax shives, while MacAndrews and Forbes uses quantities of the licorice root remaining after extraction of licorice.

Most of the insulation board manufacturers use the groundwood process for pulping wood. Actual grinding is preceded in one instance by a hot caustic soaking of 24 to 48 hours to soften the fiber. Other companies use the Asplund system of defibrating or some other system of steam or semi-chemical cooking of chips followed by disk refining. Fir-Tex Insulation Board Co. and the Simpson Logging Co. use residues for part of their raw material.

American companies use both cylinder formation and modified Fourdrinier formers. Both types of formers are being installed in new plants or additions to present plants. The dryers are all multideck, continuous tunnel type.

Hardboard Industry

The hardboard industry started in 1928 when William Mason, developer of the Masonite process, received his first patent. The initial plant was at Laurel, Miss. In 1934, U.S. Gypsum Co. at Greenville, Miss., started to produce hardboard by pressing previously dried insulation board. From then until 1948, no additional plants were built, although Masonite Corp. expanded several times. In 1948, a small plant was constructed by Chapman Mfg. Co. at Corvallis, Ore. At present 13 companies are manufacturing hardboard in 15 plants. Another five plants are under construction. Current production is at the rate of about 1¾ billion sq. ft. per year (⅛ in. basis).

Hardboard is manufactured exclusively from wood in the United States.

PRODUCTION OF HARDBOARD BY COUNTRIES

(Figures given in thousands of metric tons; suggested formula for converting to square feet basis 1 metric ton = 2939 sq. ft.)

	1951	1954	1955
United States	312	447	485
Sweden	254	302	353
USSR		80	50
Germany (West)	88	64	80
Australia	26	62	67
Canada	59	48	62
Norway	46	53	53
Finland	54	63	70
France	39	56	59
Belgium	24	39	39
Italy	33	34	34
Czechoslavakia		21	24
Germany (East)		13	19
Poland		22	22
So. Africa		25	na
United Kingdom	14	21	21
Austria	14	34	24
New Zealand	8	12	14
Argentine		15	16
Mexico		10	na
Spain		10	na
Japan	9	9.9	15
Ireland		9.1	9.1
World Totals	990	1440	1600

(Includes other minor producers not shown above)
Source: UN-FAO

UNITED STATES—HARDBOARD AND INSULATION BOARD PRODUCTION

In M sq. ft.—⅛ in. basis for hardboard; ½ in. basis for insulation board.

	Hardboard[1]	*Insulation*[2] *Board*
1951	835,000	2,341,000
1952	953,000	2,297,000
1953	1,226,000	2,500,000
1954	1,267,000	2,650,000
1955	1,441,000	2,968,000
1956	1,533,000	3,040,000

U.S. Census Bureau.
[1] Density over 26 lbs. per cu. ft. Includes only hard pressed boards made from woodpulp, does not include chip, flake or particle boards made from unpulped chips, shavings or other wood waste.
[2] Density 26 lbs. or less per cu. ft.

Originally all processes were wet; that is, the fiber was pulped, refined, conveyed, and formed from a pulp slurry. Board so made is said to be wet-felted. If the formed mat of fiber is hot-pressed and dried in the hot press, a screen must be used on one surface of the mat to allow steam to escape while hot-pressing.

New Estimates Of Wood Supply

By F. L. MORAVETS

Pacific Northwest Forest and Range Experiment Station
U.S. Forest Service

Periodic estimates of the cu. ft. volume of pulpwood species in the forests of the Pacific Northwest region, comprised of Oregon and Washington, have long been features of the REVIEW NUMBERS of PULP & PAPER. These estimates, prepared by the Forest Economics Research Division of the Pacific Northwest Forest and Range Experiment Station, U.S. Forest Service, Portland, Ore., have been based on periodic Forest Survey inventories.

The most recent regional estimate is current as of 1956. Although previous articles in REVIEW NUMBERS have shown only the volume in the so-called pulp species—Western hemlock, Sitka spruce, the true firs, Englemann spruce, mountain hemlock, and black cottonwood—it is now desirable to show the volume of all species as present pulp processes can and do use practically any species.

The Douglas-fir subregion includes the portions of Oregon and Washington lying west of the summit of the Cascade Range; the ponderosa pine subregion includes the portions east of the summit.

In addition to the live timber inventory there is a large volume of plant residues developed in the Pacific Northwest in the manufacture of lumber, plywood, and other primary products. Currently, nearly a billion cu. ft. of plant residue is developed annually in the region. Of this volume, about 13% is being utilized for fiber, 60% for industrial and domestic fuel, and 3% for other purposes; the remaining 24% is not utilized.

Estimated Net Volume of Live Timber 5 Inches d.b.h. and Larger in Oregon and Washington by Subregion, 1956

Species	*Total region*	*Douglas-fir sub-region*	*Ponderosa pine sub-region*
	Million cubic feet		
Douglas fir	65,754	59,375	6,379
Western hemlock and Sitka spruce	26,830	26,270	560
True firs	17,404	12,181	5,223
Engelmann spruce	872	102	770
Lodgepole pine	3,117	235	2,882
Other softwoods	29,857	10,916	18,941
Total softwoods	143,834	109,079	34,755
Red alder	4,392	4,392	—
Other hardwoods	2,402	2,334	68
Total hardwoods	6,794	6,726	68
Total all species	150,628	115,805	34,823

Estimated Net Volume of Live Timber 5 Inches d.b.h. and Larger in Oregon and Washington by State, 1956

Species	*Total region*	*Oregon*	*Washington*
	Million cubic feet		
Douglas fir	65,754	43,796	21,958
Western hemlock and Sitka spruce	26,830	8,290	18,540
True firs	17,404	7,275	10,129
Engelmann spruce	872	162	710
Lodgepole pine	3,117	2,136	981
Other softwoods	29,857	18,123	11,734
Total softwoods	143,834	79,782	64,052
Red alder	4,392	1,914	2,478
Other hardwoods	2,402	1,467	935
Total hardwoods	6,794	3,381	3,413
Total all species	150,628	83,163	67,465

INLAND EMPIRE PULPWOOD STATISTICS

Estimated Net Volume of Live Timber 5 Inches d.b.h. and Larger by Subregion[1]

Species	*Total Region*	*Subregion*[2] *N.E. Washington*	*North Idaho*	*Western Montana*
	Million Cubic Feet			
Western white pine	2,726	100	2,389	237
Ponderosa pine	4,039	1,238	1,220	1,581
Western larch	4,230	590	1,232	2,408
Douglas fir	6,255	1,196	2,462	2,597
True firs	2,888	139	2,496	253
Spruce	1,751	65	860	826
Lodgepole pine	2,668	422	1,249	997
Other softwoods	1,773	304	1,258	211
Total softwoods	26,330	4,054	13,166	9,110
Aspen	16	5	—	11
Cottonwood	91	13	39	39
Other hardwoods	7	2	5	—
Total hardwoods	114	20	44	50
Total all species	26,444	4,074	13,210	9,160

[1] *Source:* U. S. Forest Service, Forest Survey Resource Reports for Northeast Washington (1949), North Idaho (1953) and Montana (1952).
[2] Northeast Washington consists of Ferry, Lincoln, Pend Oreille, Spokane, Stevens and Whitman Counties; North Idaho is north of Salmon River; Western Montana is west of Continental Divide.

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U.S. INDUSTRY GROWTH

(in Millions of Units)

	Pulpwood Consumption	Woodpulp Production	Woodpulp Consumption	Wastepaper Consumption
1939	10.8 cords	7.0 tons	8.7 tons	4.4 tons
1950	23.7	14.8	16.5	7.9
1952	26.4	16.5	17.3	7.9
1953	28.1	17.5	18.7	8.8
1954	29.2	18.3	19.0	8.1
1955	30.9	20.8	22.4	10.2
1956	35.8	22.1	22.9	8.9

	Paper & board Production	Woodpulp Imports	Newsprint Imports
1939	13.5 tons	2.0 tons	2.6 tons
1950	24.3	2.4	4.9
1952	24.4	1.9	5.0
1953	26.5	2.2	5.0
1954	26.7	2.1	5.0
1955	29.8	2.2	5.2
1956	31.3	2.3	5.6

PRODUCTION WORKERS AND WAGES IN U.S. PULP, PAPER AND ALLIED PRODUCTS INDUSTRIES

Year	Average number of wage earners (Thousands)	Total dollar wages (Millions)
1899	94	36
1909	145	68
1919	203	208
1929	229	281
1939	265	310
1949	382	1,112
1951	420	1,436
1953	442	1,670
1954	439	1,690
1955	453	1,893
1956	463	2,147

Source: U. S. Bureau of Labor Statistics. Source of data prior to 1939: Bureau of Census.

VALUE OF SALES IN U.S. INDUSTRY AND BY WHOLESALERS

Year	By Pulp, Paper, Board and Products Industries Millions of dollars	By Wholesale Distributors of Paper and Its Products Millions of dollars
1939	$ 1,785	$ 575
1941	2,836	739
1943	3,389	833
1945	3,725	909
1947	5,764	1,828
1949	5,468	1,723
1950	6,976	2,013
1951	8,439	2,400
1952	7,877	2,195
1953	8,542	2,587
1954	8,702	2,681
1955	9,988	3,490
1956	13,399	*

* Series discontinued

Source: U. S. Dept. of Commerce.

BASIC U.S. PRODUCTION AND CONSUMPTION DATA

	PAPER		WOODPULP			
	Production (tons)	Consumption (tons)	Production (tons)	Consumption For Paper Only (tons)	Consumption All Purposes (paper, rayon, cellophane, film, plastics, etc.,—tons)	PULPWOOD Consumption (cords)
1899	2,167,593	2,158,000	1,179,525	1,216,254	.....	1,986,310
1909	4,216,708	4,224,000	2,495,523	2,856,593	.....	4,001,607
1919	6,190,361	6,479,490	3,517,952	4,113,911	.....	5,477,832
1929	11,140,235	13,347,925	4,862,885	6,704,341	.....	7,645,011
1934	9,186,266	11,185,682	4,436,128	5,969,633	.....	6,796,659
1938	11,327,000	13,488,300	5,933,560	7,975,000	.....	9,193,991
1942	17,083,862	19,608,862	10,783,430	11,038,020	.....	17,204,000
1946	19,277,667	22,509,788	10,605,225	12,092,093	12,605,093	17,817,560
1948	21,897,301	26,082,093	12,872,292	14,374,586	15,034,586	21,189,458
1949	20,315,436	24,694,482	12,171,786	13,606,387	14,181,387	19,949,440
1950	24,377,222	29,013,060	14,810,860	16,483,201	17,183,201	23,627,000
1951	26,086,115	30,609,822	16,494,000	17,704,000	18,480,000	26,576,000
1952	24,422,785	29,013,000	16,472,979	17,274,000	18,041,008	26,476,110
1953	26,458,781	31,322,952	17,537,295	18,681,713	19,480,837	28,150,003
1954	26,656,631	31,159,209	18,341,175	19,033,994	19,900,794	29,201,000
1955	29,896,748	34,526,162	20,739,696	21,453,766	21,484,000	33,332,000
1956	31,335,853	36,523,564	22,117,998	22,945,491	23,867,391	35,752,000

Source: American Paper and Pulp Assn.; U. S. Census Bureau; U. S. Pulp Producers Assn.

U.S. PULP & PAPER INDUSTRY

Number of Companies and Mills

	Co's	—Mills— Paper	Pulp
1946	517	735	242
1947	560	758	241
1948	570	768	245
1949	565	764	255
1950	572	767	259
1951	530	769	278
1952	490	768	303
1953	483	772	299
1954	482	775	319
1955	495	788	326
1956	493	804	330

UNITED STATES—WEEKLY EARNINGS PULP, PAPER, PAPERBOARD AND CONVERTED PRODUCTS

Year	No. of Production Workers (In Thous.)	(For Production Workers Only) Ave. Weekly Earnings	Ave. Weekly Hours	Ave. Hourly Earnings
1947	406	$50.21	43.1	$1.16
1948	407	$55.25	42.8	$1.29
1949	389	$55.96	41.0	$1.34
1950	415	$61.14	43.3	$1.41
1951	434	$65.51	43.1	$1.52
1952	422	$68.91	42.8	$1.61
1953	444	$72.90	43.0	$1.69
1954	437	$74.01	42.3	$1.75
1955	453	$78.87	43.1	$1.83
1956	464	$83.03	42.8	$1.94

Source: U.S. Bureau of Labor Statistics

WAGES AND INDUSTRY WORTH

Year	Wage Earners	Wages Paid	Industry Worth
1849	6,785	$1,497,792	$7,260,864
1869	18,021	7,208,691	34,556,014
1880	31,050	13,204,828	89,829,548
1899	49,646	20,746,426	167,507,713
1909	75,978	40,804,502	409,348,505
1919	113,759	135,690,642	905,794,583
1929	128,049	173,077,781	1,250,000,000
1939	137,445	175,687,842	1,700,000,000
1943	150,000	299,000,000	1,990,000,000
1946	167,000	366,000,000	2,440,000,000
1949	198,000	614,000,000	3,200,000,000
1950	205,000	694,000,000	3,800,000,000
1952	219,000	839,000,000	4,500,000,000
1953	221,000	919,360,000	4,560,000,000**
1954	439,000	1,690,000,000	4,970,000,000**
1955	453,000	1,893,000,000	5,400,000,000
1956	464,000	1,956,000,000	5,770,000,000*

* Estimated.
** Federal Trade Commission.

Source: U.S. Census Bureau, APPA.

U.S. NEWSPRINT CONSUMPTION

	Population	Newsprint Tons	Paper Used Per Capita Lbs.
1924	113,090,000	2,737,000	48.4
1930	123,091,000	3,563,000	57.9
1935	127,521,000	3,300,000	51.7
1940	132,817,000	3,730,000	56.2
1944	138,101,000	3,250,000	47.1
1945	139,621,000	3,480,000	49.8
1946	141,229,000	4,296,000	60.8
1947	143,382,000	4,753,000	66.3
1948	146,116,000	5,141,000	70.4
1949	149,215,000	5,529,000	74.1
1950	151,376,000	5,937,000	78.4
1952	155,300,000	5,988,000	77.2
1953	160,873,000	6,143,000	76.9
1954	162,400,000	6,150,000	75.8
1955	167,181,000	6,638,000	80.8
1956	170,700,000	7,032,000	83.8

TOTAL PAPER PRODUCTION IN UNITED STATES BY GRADES

(Tons of 2,000 lbs.)

Year	Newsprint	Book	Groundwood	Fine	Wrapping (Coarse)	Tissue	Sanitary	Absorbent	Building Paper	Other Paper	Total All Paper	Total Paper and Board
1899	569,121	304,459	*.....	131,456	535,252	28,406	*.....	*.....	*.....	*204,697	1,773,482	2,167,593
1924	1,481,425	1,050,000	*.....	422,000	1,235,000	242,000	*.....	*.....	*.....	*649,560	5,079,985	7,929,985
1940	1,056,304	1,655,423	550,453	735,753	2,500,818	733,894	.....	129,410	682,460	60,120	8,104,635	14,483,709
1945	725,475	1,501,015	636,026	1,000,794	2,403,182	157,083	823,705	88,643	883,259	238,047	8,457,229	17,370,955
1948	875,760	3,153,999		1,140,859	3,026,699	205,095	982,692	107,305	1,321,431	307,690	11,118,530	21,897,301
1950	1,013,346	3,302,861		1,198,574	3,285,635	225,199	1,148,351	126,690	1,424,633	340,903	12,066,192	24,377,222
1951	1,108,165	3,514,061		1,366,425	3,627,072	270,138	1,215,258	124,412	1,385,691	419,036	13,010,418	26,048,143
1952	1,108,723	3,385,179		1,295,179	3,237,885	209,000	1,148,000	118,000	1,298,799	396,698	12,197,165	24,422,785
1953	1,068,661	3,576,338		1,289,569	3,397,782	231,166	1,277,494	127,644	1,317,253	538,249	12,703,754	26,458,781
1954	1,202,413	3,587,360		1,284,526	3,461,611	226,342	1,385,895	[1].....	1,428,349	500,525	13,077,021	26,876,242
1955	1,459,017	3,919,231		1,463,543	3,681,932	240,060	1,527,903	[1].....	1,586,098	603,708	14,346,000	30,140,190
1956	1,615,349	4,264,343		1,604,917	3,993,555	247,067	1,536,949	[1].....	1,370,671	689,176	15,262,027	31,335,853

** In 1899 and 1924 groundwood, absorbent, sanitary and building papers are included in "Other Paper." Beginning in 1948, groundwork included with book.*
[1] Absorbent included in "Other Paper."

Source: U.S. Census Bureau

U.S. PAPER PRODUCTION, IMPORTS, EXPORTS, AND CONSUMPTION

(All Grades–in tons of 2,000 lbs.)

Year	Production	Imports**	Exports**	Consumption Tons	Consumption Lbs/Capita
1899	2,167,593	.....	.....	2,167,593	57.9
1909	4,121,495	55,962	74,764	4,102,693	90.5
1919	5,966,076	707,548	420,540	6,253,084	119.1
1929	11,140,235	2,533,603	262,383	13,411,455	220.3
1939	13,509,642	2,687,484	248,569	15,948,557	243.7
1942	17,083,862	3,038,499	341,920	19,780,441	293.8
1945	17,370,965	2,753,211	458,689	19,665,487	281.7
1948	21,897,301	4,581,811	397,019	26,082,093	355.9
1949	20,315,436	4,751,323	372,277	24,694,482	331.0
1950	24,377,222	5,007,384	371,546	29,013,060	382.5
1951	26,086,115	5,158,010	634,303	30,609,822	396.6
1952	24,422,785	5,191,051	592,231	29,013,000	372.5
1953	26,458,781	5,231,326	474,730	31,322,952	392.4
1954	26,656,631	5,189,500	699,918	31,146,213	383.6
1955	29,896,748	5,474,640	845,177	34,526,211	418.5
1956	31,335,853	5,827,767	640,056	36,523,564	434.5

**Quantities estimated, wholly or in part, from values given. Imports and exports for various grades include 'Paper Products.'

Source–U. S. Census Bureau; APPA.

SUMMARY OF FINANCIAL DATA OF PAPER AND ALLIED PRODUCTS

	Total Assets	Net Worth (billions)	Net Sales	Federal Taxes (millions)	Sales to Total Assets (ratio)	Net Earnings to: Net Worth (percent)	Sales
1946	$3.27	$2.44	$4.22	$212	1.3	14.6	8.4
1947	3.99	2.90	5.53	339	1.4	19.7	10.3
1948	4.39	3.23	5.85	293	1.3	15.0	8.3
1949	4.20	3.20	4.86	213	1.4	11.4	7.5
1950	5.21	3.80	6.66	448	1.3	14.6	8.4
1951	6.28	4.33	8.20	792	1.3	12.1	6.4
1952	6.40	4.50	7.65	531	1.2	9.2	5.4
1953	6.82	4.56	8.37	554	1.2	9.9	5.4
1954	7.09	4.97	8.49	493	1.2	9.7	5.6
1955	7.78	5.40	9.85	601	1.3	11.2	6.1
1956	8.49	5.77	10.70	626	1.3	11.4	6.1

Source: American Paper & Pulp Assn.

TOTAL UNITED STATES PRODUCTION OF WOODPULP

(Tons of 2000 pounds)

Year	Total	Unbleached Sulfite	Bleached Sulfite	Total Sulfate	Groundwood	Soda	All Other
1925	3,962,217	790,510	612,576	409,768	1,612,019	472,647	64,697
1935	4,925,669	634,947	944,620	1,467,749	1,355,819	417,724	104,810
1940	8,959,559	995,700	1,612,089	3,747,992	1,632,727	532,387	438,664
1942	10,783,430	1,213,066	1,717,206	4,738,266	1,869,862	462,065	782,965
1944	10,108,443	862,928	1,523,221	4,548,810	1,769,287	412,755	991,442
1946	10,606,527	784,391	1,692,077	4,588,016	1,951,456	476,211	1,114,376
1948	12,872,292	901,814	1,909,402	6,013,696	2,175,107	509,864	1,362,409
1950	14,807,575	740,895	2,107,541*	7,501,429	2,215,883	522,221	1,719,606
1951	16,494,386	754,916	2,378,692*	8,576,298	2,476,635	446,483	1,861,362
1952	16,472,979	673,453	1,691,523	8,568,704	2,379,740	425,415	2,028,111
1953	17,537,295	593,958	1,728,648	9,444,816	2,342,929	427,546	2,999,398
1954	18,341,175	582,156	1,800,734	9,807,982	2,428,550	431,603	3,290,150
1955	20,739,696	646,423	1,909,006	11,289,344	2,728,870	440,454	3,725,599
1956	22,121,285	682,267	2,002,498	12,131,103	3,022,478	478,730	3,804,209

Source: U. S. Bureau of the Census revised 1953 figures issued June 1954.

Note: Through 1939, "exploded" woodpulp is included in Groundwood and thereafter in "All Other." 1933 through 1936 data on Soda are estimated from United States Bureau of the Census combined data for Soda and Semichemical pulp. Bleached and Semi-Bleached Sulfate totaled 7,055,609 tons in 1953; 6,485,860 in 1952. Semi-chemical Pulp totaled 1,028,721 tons in 1953; 828,917 in 1952.

** Includes dissolving grades of bleached sulfate.*

U.S. WOODPULP IMPORTS FROM EUROPE

(Short Tons)

			Norway	Austria	Czech.	France	Ger.	Switz.	Total**
1945*	672,261	0	0	0	0	0	0	0	672,261
1946	445,114	115,220	0	0	0	0	0	0	560,334
1947	555,215	223,973	9,577	0	0	0	0	0	793,693
1948	384,576	175,900	13,218	1,696	0	0	0	0	575,390
1949	265,621	148,903	29,208	4,459	1,027	0	0	0	449,218
1950	398,814	205,651	28,958	21,005	2,597	115	977	89	668,146
1952	189,613	145,630	21,168	2,430	0	124	169	0	359,138
1953	334,813	160,216	36,777	9,996	0	211	588	0	542,601
1954	224,471	132,792	14,997	0	0	50	0	0	372,310
1955	189,845	144,982	13,696	0	0	55	0	0	348,578
1956	213,332	153,618	9,335	554	0	0	0	0	376,879

* The 1945 figure is for only 6 mos., when shipping reopened after the war.

** Includes 167 tons from Italy in 1950; 4,928 tons from Russia in 1947 and 9,773 tons from Russia in 1950; 4 tons from Australia in 1952; 12 tons from Italy and 28 tons from the Netherlands in 1956.

U.S.—ALL PAPER OTHER THAN PAPERBOARDS

(In Thousands of Tons)

	Produced	Imp'ts	Exp'ts	Consumption Tons	Consumption Lbs. per Capita
1899	1,773	....	...	1,773	47
1914	3,860	349	106	4,103	84
1924	5,079	1,445	100	6,424	113
1934	5,173	2,252	114	7,311	116
1941	9,362	3,086	317	12,131	182
1947	10,705	4,060	297	14,468	201
1949	10,349	4,681	226	14,804	198
1950	12,066	4,922	225	16,763	221
1952	12,194	5,106	388	16,911	217.1
1953	12,703	5,106	257	17,552	219.9
1954	12,970	5,091	389	17,673	217.6
1955	14,346	5,248	414	19,180	229
1956	15,262	5,679	339	20,602	245.1

Source: APPA, Census Bureau

U.S. BOOK PAPER

(In Thousands of Tons)

	Produced	Imp'ts	Exp'ts	Consumption Tons	Consumption Lbs. per Capita
1899	304	..	..	304	8
1914	795	6	14	788	16
1924	1,050	14	10	1,053	18
1934	1,055	4	12	1,047	16
1941	2,025	28	51	2,002	30
Beginning 1941, text papers allocated to fine papers.					
1947	2,207	74	76	2,206	31
Beginning 1948 Groundwood Papers included with Book Paper. Groundwood was in All Other Paper.					
1949	2,972	28	41	2,965	40
1950	3,303	38	27	3,314	44
1952	3,387	48	66	3,369	43
1953	3,593	45	26	3,612	45
1954	3,583	44	41	3,586	44
1955	3,871	41	51	3,861	46.8
1956	4,264	54	44	4,274	50.9

Source: APPA, Census Bureau

U.S. FINE PAPERS

(In Thousands of Tons)

	Produced	Imp'ts	Exp'ts	Consumed Tons	Consumed Lbs. per Capita
1899	131	..	..	131	3
1914	269	..	3	266	5
1924	422	1.3	4	419	7
1934	434	.8	10	425	7
1941	950	2	46	903	14
1947	1,171	.6	68	1,103	15
1949	1,015	.6	48	967	13
1950	1,199	1.4	41	1,159	15
1952	1,295	1.7	47	1,249	16
1953	1,289	2.4	40	1,242	15
1954	1,324	2.3	47	1,279	16
1955	1,454	2.3	42	1,280	16
1956	1,464	2.6	47	1,419	17

From 1899 to 1940 inclusive, only writing and cover were in fine papers. Beginning 1941, text papers (from book), bristol (from paperboard), and "thin papers" (from tissue) have been added.

Source: APPA, Census Bureau.

U.S. PRICES OF DISSOLVING WOODPULP

Dollars Per Short Ton

		Regular Tenacity Viscose	High Tenacity Viscose	Acetate & Cupra
	1929	$ 97.00		
	1933	70.00		
Jan.	1938	97.50		100.00
Jan.	1946	107.50	112.50	117.50
Jan.	1947	132.00	138.50	148.00
Mar.	1948	157.00	167.00	182.00
Jun.	1949	159.00	168.00	178.00
Oct.	1949	150.00	161.00	171.00
Aug.	1950	159.00	170.00	185.00
Jan.	1951	185.00	195.00	225.00
May	1952	185.00	195.00	225.00
May	1953	185.00	195.00	225.00
May	1954	185.00	195.00	225.00
July	1955	185.00	195.00	225.00
July	1956	185.00	195.00	225.00
July	1957	188.00	200.00	225.00

U.S. COARSE PAPERS

(In Thousands of Tons)

	Produced	Imp'ts	Exp'ts	Consumed Tons	Consumed Lbs. per Capita
1899	535	..	...	535	14
1914	911	18	7	922	18.8
1924	1,235	25	18	1,242	22
1934	1,356	5	32	1,329	21
1943	2,262	1	49	2,213	32
1947	2,903	22	51	2,874	40
1949	2,758	6	56	2,708	36
1950	3,286	11	73	3,324	43
1952	3,235	10	121	3,124	40
1953	3,397	35	86	3,371	42
1954	3,429	36	95	3,369	42
1955	3,715	40	120	3,635	44.1
1956	3,994	48	68	3,913	46.6

Source: APPA, Census Bureau

U.S.—TISSUE PAPERS

(In Thousands of Tons)

	Produced	Imp'ts	Exp'ts	Consumed Tons	Consumed Lbs. per Capita
1899	28	..	..	28	1
1914	115	..	..	115	2
1924	242	6	4	244	4
1934	397	8	7	398	6
1941	912	.07	25	889	13
1947	1,088	1	18	1,071	15
1949	1,195	1.4	21	1,175	16
1950	1,374	.5	18	1,356	18
1952	1,357	.2	17	1,340	17
1953	1,488	1.9	22	1,467	18.4
1954	1,561	1.8	22	1,540	19
1955	1,685	1.8	24.1	1,662	20.1
1956	1,768	1.1	24.1	1,745	21.1

Source: APPA, Census Bureau

U.S.—ALL OTHER PAPER

(In Thousands of Tons)

	Produced	Imp'ts	Exp'ts	Consumed Tons	Consumed Lbs. per Capita
1899	53	..	..	53	1.4
1914	107	46	37	116	2.3
1924	129	31	40	120	2.1
1934	298	14	22	290	4.6
1943	296	3	15	283	4.2
1947	389	3	38	354	4.9
1949	338	3	35	306	4.1
1950	460	5	14	450	5.9
1952	513	10	24	499	6.4
1953	538	12	27	523	6.6
1954	526	13	33	505	6.2
1955	642	27	41	628	7.6
1956	689	..	20	669	8.0

Source: APPA.—Up to 1948, included groundwood. Since then, groundwood included in book.

U.S. IMPORTS OF EUROPEAN WOODPULP BY GRADES

(Short Tons)

	Bleached Sulfite Paper Grades	Bleached Sulfite Non-Paper Grades	Unbl'ch'd Sulfite	Sulfite Bleached Sulfate	Sulfite Unbl'ch'd Sulfate	Groundwood	Total*
1946	27,541	12,417	207,059	23,484	260,434	29,399	560,334
1950	115,020	8,262	163,975	86,548	257,160	34,618	668,146
1952	59,774	3,317	125,623	70,568	72,103	27,529	359,138
1953	99,459	1,291	126,075	119,722	138,013	56,669	543,903
1954	41,955	2,230	73,451	95,681	117,470[1]	37,328	372,310
1955	35,254	347	68,030	80,234	129,409[2]	32,106	348,578
1956	37,416	111	83,180	87,060	138,361[3]	23,525	376,879
'57(3mos)	7,754	—	16,593	16,375	27,463	3,438	72,519
'56(3mos)	7,354	56	14,038	18,323	28,185	6,852	74,918

* Includes screenings and soda.
[1] Includes 13,260 tons semi-bleached.
[2] Includes 12,544 tons semi-bleached.
[3] Includes 19,536 tons semi-bleached.
Source: Bureau of the Census.

U.S. NEWSPRINT SUPPLY AND SOURCES

	In thousands of short tons from Canada	from U.S.A.	from Europe	Total	Percentages from Canada	from U.S.A.	from Europe
1915	367	1,184	1	1,552	24	76	0
1925	1,315	1,507	133	2,955	45	51	4
1930	2,145	1,272	134	3,551	60	36	4
1935	2,122	911	197	3,230	66	28	6
1940	2,741	998	34	3,773	73	26	1
1945	2,666	707	nil	3,373	79	21	0
1946	3,563	754	13	4,330	82	18	0
1949	4,380	884	255	5,519	79	16	5
1951	4,784	1,108	206	6,098	79	18	3
1952	4,855	1,065	190	6,110	79	18	3
1953	4,861	1,037	164	6,062	80	17	3
1954	4,875	1,085	140	6,100	80	18	2
1955	5,025	1,270	125	6,420	78	20	2
1956	5,230	1,582	311	7,123	73	22	4

U.S.—NEWSPRINT

(In Thousands of Tons)

	Produced	Imp'ts	Exp'ts	Consumption Tons	Consumption Lbs. per Capita
1899	569	....	...	569	15
1914	1,313	278	44	1,547	32
1924	1,481	1,357	17	2,821	50
1934	989	2,209	23	3,175	50
1941	1,043	2,982	70	3,956	60
1947	833	3,957	28	4,762	66
1949	918	4,640	39	5,519	74
1950	1,013	4,863	44	5,832	77
1951	1,106	4,968	71	6,004	78
1952	1,106	5,033	105	6,034	78
1953	1,068	5,004	47	6,086	76
1954	1,191	4,992	140	6,043	74
1955	1,458	5,159	207	6,638	80.8
1956	1,615	5,569	152	7,032	83.8

Source: Census Bureau, APPA.

TYPICAL PULP PRICES IN THE UNITED STATES
(Prepared especially by PULP & PAPER)

Before World War II—Under OPA Regulation (1944 and 1946 allowed increases are shown)—and in recent years. Specially prepared authentic table for this WORLD REVIEW.
Swedish and Norwegian prices are N. Y. *Dock* prices; U. S. and Canadian are *"Delivered"* and Maximum Freight Allowances are noted.

	Domestic Bleached Kraft	Canadian Bleached Kraft	Swedish Unbl'ched Kraft	Swedish Bleached Sulfite	Domestic Bleached Sulfite	Canadian Bleached Sulfite	Norway Bleached Sulfite	Canadian Unbl'ched Sulfite	Swedish Unbl'ched Sulfite
1939	—	—	$28	$43	$50	—	—	—	$36
1944	—	—	$69	$82	$86	$86	—	$75	$70
1946	—	—	$79	$91	$94	$94	—	$82	$79
Apr. 1949	$136	$136	$112	$132	$126	$130	$125	$118	$122
June 1951	$135 to $200 (1)	$195 (2)	$225	$250 to $290	$135 to $165	$160 (2) to $175 (2)	$250	—	$225 to $265
June 1952	$142 (3) to $167 (4)	$190 to $190 (1)	$145 to $150	$175 to $182.50	$140 (3)	$160 to $165	$175 to $180	$150	$155 to $160
May 1953	$140 to $147.50	$145 to $155	$100 to $125	$130 to $135	$140	$140 to $145	$140 to $145	$130 to $135	$110 to $125
May 1954	$140 to $147.50	$145 to $150	$105 to $110	$135 to $140	$140	$140	$135 to $142.50	$120	$115 to $122
July 1955	$150	$150	$110 to $115	$142.50 to $145	$145	$145	$140 to $142.50	$125	$125 to $128
July 1956	$152 to $155	$152 to $155	$125	$150 to $155	$150	$150	$150 to $155	$130	$130
July 1957	$155	$155	$130	$145	$150	$150	$150 to $155	$130	$130

Maximum Freight Allowances:
(1) $12.50 (2) $7.50 (3) $18.50 (4) $15.00.

U.S. PRICES OF COTTON LINTERS PULP
Dollars Per Short Ton

	Annual Average	Low	High
1948	225.00	187.00	260.00
1949	172.00	160.00	187.00
1950	337.00	187.00	546.00
1951	459.00	316.00	554.00
1952	288.00	223.00	316.00
1953	235.60	223.00	250.00
1954	210.00	210.00	210.00
1955	210.00	210.00	210.00
1956		206.00 to 220.00	
1957	280.00		

U. S. Dept. Agric.—Regional Research Lab.

U.S. IMPORTS OF NORTH AMERICAN WOODPULP BY GRADES

(Short Tons)

Includes: Canada, Newfoundland, Labrador, Mexico

	Bleached Sulfite								
	Paper Grades	*Non-Paper Grades*	*Unbl'ch'd Sulfite*	*Sulfate Bleached*	*Sulfate Unbl'ch'd*	*Groundwood Bleached*	*Groundwood Unbl'ch'd*	*Soda*	*Total*
1946	195,112	189,775	411,512	56,213	137,472	———	220,823	19,740	1,245,131
1949	241,280	149,801	256,993	323,212	117,917	538	188,620	27,315	1,313,325
1950	288,014	229,092	64,531	366,047	183,238	15,548	228,627	33,947	1,717,035
1952	215,296	220,010	306,929	448,467	135,768	31,622	183,089	28,071	1,581,214
1954	246,441	228,143	265,957	551,484	152,382[1]	51,253	147,975	37,936	1,688,410
1955	338,972	204,709	290,850	566,182	194,917[2]	40,795	178,244	41,260	1,864,775
1956	369,676	173,980	306,711	577,357	229,953[3]	44,904	200,900	42,669	1,954,443
1957 (3 mos.)	90,206	35,606	60,755	128,804	74,855	9,125	48,561	10,207	459,591
1956 (3 mos.)	97,976	58,200	77,577	140,406	49,809	14,910	43,165	11,209	486,084

[1] Includes 11,324 tons semi-bleached.
[2] Includes 29,746 tons semi-bleached.
[3] Includes 44,678 tons semi-bleached.
Source: Bureau of the Census.

UNITED STATES WOODPULP PRODUCTION—1955 VS. 1956

	Total Woodpulp, All Grades			Market Woodpulp, All Grades		
	1955	*1956*	*% Change*	*1955*	*1956*	*% Change*
Capacity	22,407,489	24,197,531	+7.5			
Production	20,827,562	22,117,998	+6.1	2,707,420	2,691,756	−1.0
Imports	2,213,353	2,334,253	+5.4	1,610,000	1,668,957	+3.6
Canada				1,262,187	1,291,296	+2.3
Other				348,632	377,661	+8.3
Exports	634,276	531,399	−17	634,276	531,399	−17.0
New Supply	22,318,773	23,920,852	+7.1	3,683,963	3,829,314	+3.9
Consumption	22,424,066	23,867,391	+6.4	3,745,998	3,786,295	+ .01
In Paper and Board	21,485,366	22,945,491	+6.8	2,886,298	2,977,295	+6.2
In Non-Paper	970,800	921,900	−5.0	859,700	809,000	−6.0
Inventory Dec. 31st						
At Pulp Mills	131,734	189,492	+4.1			
At Paper & Board Mills (Not 100%)	528,636	105,412	−81.0			

Total imports are slightly larger than market pulp imports because they include imports to paper mills from their own mills in Canada and for their own use.
Source: U.S. Pulp Producers Assn.

PULP PRODUCTION BY REGIONS (with figures as available for certain states)

	1954*
Northeast	2,576,371 tons
New England	1,625,742
Maine	1,294,450
Middle Atlantic	950,629
New York	540,774
New Jersey	84,135
Pennsylvania	325,720
East North Central	1,501,842
Ohio	82,168
Illinois	77,939
Michigan	266,511
Wisconsin	1,075,224
West North Central	567,856
South	10,169,250
South Atlantic	6,064,201
Virginia	845,152
North Carolina	859,692
Georgia	1,573,458
Florida	1,747,224
East South Central	1,934,501
Mississippi	1,012,603
West South Central	2,170,548
Louisiana	1,456,837
West	3,440,820
Washington	2,382,945
Oregon	681,588

*Latest available

Year	Capacity	Total Production	CONTAINERBOARD				BOXBOARD				
			Total	Liners	Corrugating Materials	Chip and Filler Board	Total	Folding	Set-Up	Special Food Board	All Other Paperboard
1925	4,807,700	3,125,000	1,470,900	782,800	281,000	407,100	1,654,100	707,900	639,900	*	306,300
1926	5,057,800	3,388,700	1,618,000	862,700	322,100	433,200	1,770,700	736,100	617,600		417,000
1927	5,195,700	3,481,100	1,662,700	865,000	325,600	472,100	1,818,400	796,300	547,000		475,100
1928	5,682,900	3,871,200	1,840,500	997,600	360,300	482,600	2,030,700	906,600	650,300		473,800
1929	5,941,100	4,277,600	2,005,800	1,117,900	406,400	481,500	2,271,800	956,600	657,900		657,300
Avg '26-'29	5,471,875	3,754,650	1,781,750	960,800	353,600	467,350	1,972,900	848,900	618,200		505,800
1930	5,995,600	3,957,100	1,875,600	1,087,300	385,600	402,700	2,081,500	928,800	601,900		550,800
1931	5,943,800	3,804,000	1,815,000	1,071,900	383,800	359,300	1,989,000	921,000	554,600		513,400
1932	6,036,000	3,319,800	1,619,600	965,600	373,000	281,000	1,700,200	788,700	479,900		431,600
1933	6,252,100	3,938,800	1,978,900	1,214,500	459,800	304,600	1,959,900	895,300	551,600		513,000
1934	6,496,100	3,962,600	1,986,100	1,227,900	483,000	275,200	1,976,500	937,900	506,000		532,600
1935	6,798,500	4,555,000	2,309,000	1,440,800	587,200	281,000	2,246,000	1,047,100	531,100		667,800
1936	7,211,800	5,336,700	2,738,200	1,704,800	698,700	334,700	2,598,500	1,212,200	587,700		798,600
1937	7,309,900	5,555,500	2,880,500	1,800,000	737,500	343,000	2,675,000	1,237,800	570,000		867,200
1938	7,839,200	4,938,700	2,479,800	1,552,000	673,500	254,300	2,458,900	1,162,400	518,800		777,700
1939	7,834,100	5,953,900	3,000,300	1,877,900	837,900	284,500	2,953,600	1,385,000	585,700		982,900
Avg '30-'39	6,771,710	4,532,210	2,268,300	1,394,270	562,000	312,030	2,263,910	1,051,620	548,730		663,560
1940	8,007,700	6,326,100	3,147,600	1,965,900	903,400	278,300	3,178,500	1,413,100	613,200		1,152,200
1941	8,588,900	7,901,800	4,044,400	2,560,900	1,132,600	350,900	3,857,400	1,749,300	731,500		1,376,600
1942	8,528,200	7,163,700	3,607,300	2,272,200	932,100	403,000	3,556,400	1,440,500	615,900	325,000	1,175,000
1943	8,238,900	7,662,200	3,939,300	2,493,100	1,029,700	416,500	3,722,900	1,612,700	599,000	385,300	1,125,900
1944	8,561,200	7,961,900	4,123,100	2,598,200	1,089,900	435,000	3,838,800	1,660,700	543,100	386,500	1,248,500
1945	8,535,700	7,938,200	4,099,800	2,590,800	1,111,500	397,500	3,838,400	1,722,200	511,600	400,000	1,204,600
Avg '40-'45	8,410,100	7,492,317	3,826,917	2,413,517	1,033,200	380,200	3,665,400	1,599,750	602,383	374,200**	1,213,800
1946	8,846,300	8,492,400	4,313,700	2,721,800	1,263,100	328,800	4,178,700	2,109,000	474,100	445,600	1,150,000
1947	9,455,500	9,360,900	4,888,400	3,137,600	1,420,300	330,500	4,472,500	2,096,500	601,500	460,800	1,313,700
1948	10,092,800	9,588,200	4,960,300	3,251,600	1,387,300	321,400	4,627,900	2,066,400	639,500	443,400	1,478,600
1949	11,096,000	9,209,700	4,623,100	3,004,100	1,349,200	269,800	4,586,600	2,010,100	662,500	515,600	1,398,400
Avg '46-'49	9,872,650	9,162,800	4,696,375	3,028,775	1,354,975	312,625	4,466,425	2,070,500	594,400	466,350	1,335,175
1950	11,861,200	11,149,500	5,692,600	3,709,000	1,670,000	313,600	5,456,900	2,358,100	729,800	705,000	1,664,000
1951	12,650,200	11,891,200	6,207,900	4,043,900	1,806,000	358,000	5,683,300	2,341,800	681,900	810,600	1,849,000
1952	12,999,400	11,049,500	5,637,600	3,682,800	1,625,800	329,000	5,411,900	2,186,400	635,300	834,800	1,755,400
1953	13,488,400	12,544,200	6,440,400	4,209,200	1,896,500	334,700	6,103,800	2,382,500	680,300	963,800	2,077,200
1954	13,961,000	12,285,700	6,265,400	4,110,800	1,876,700	277,900	6,020,300	2,351,900	610,200	1,002,100	2,056,100
1955	14,622,600	14,037,700	7,283,800	4,798,600	2,166,100	318,300	6,754,700	2,571,600	653,700	1,147,300	2,382,100
1956	15,283,000	14,366,000	7,522,800	4,976,400	2,250,300	296,100	6,843,200	2,563,100	655,500	1,245,600	2,379,000

* Special Food Board Tonnage 1925 - 1941 included with Folding and All Other.
** Average based on 4 years.

U.S. BOARD PRODUCTION

(In Thousands of Tons)

	Paperboard°	Wet Machine Board°°	Building Board
1946	8,396	138	956
1949	8,992	125	839
1950	10,803	144	1,259
1952	10,772	139	1,314
1953	12,275	152	1,379
1954	12,047	132	1,507
1955	13,749	182	1,610
1956	14,255	147	1,670

°*Container boards, box boards, cardboard and other.*
°°*Shoe board, binder board and other.*
Source: U. S. Department of Commerce

U.S. BUILDING BOARDS PRODUCTION

Year	Wallboard (Tons)	Insulating board (Tons)	Total Tons
1941	254,477	362,033	616,510
1948	364,562	905,786	1,270,348
1949	216,530	622,199	839,000
1950	381,201	838,367	1,220,000
1951	343,552	925,744	1,269,296
1952	435,154	879,655	1,314,809
1953	423,418	955,872	1,379,290
1954	493,258	1,013,740	1,506,998
1955	537,125	1,114,973	1,610,000
1956	551,118	1,118,196	1,669,314

Source: U. S. Dept. of Commerce (Pulp and Paper Section).

U.S. PAPERBOARD STATISTICS

(In Tons of 2,000 lbs.)

Year	Production	Imports	Exports	Consumption	Per Capita Consumption Lbs.
1899	394,111	.....	.....	394,111	10.5
1909	883,088	.....	.....	883,088	19.5
1919	1,867,064	44,461	61,890	1,849,635	35.2
1929	4,451,187	42,351	94,374	4,399,164	72.4
1939	6,025,494	28,728	113,571	5,940,651	90.8
1945	8,913,736	51,189	155,020	8,809,905	126.2
1948	10,775,454	75,072	170,837	10,679,689	145.7
1949	9,966,542	70,309	146,026	9,890,825	132.6
1950	12,311,030	85,850	146,168	12,250,712	150.2
1952	12,219,112	83,759	172,535	12,101,532	137.5
1953	13,862,602	124,947	217,359	13,770,190	155.2
1954	13,686,035	98,317	297,717	12,486,635	148.8
1955	15,551,000	111,692	321,669	13,891,825	168.1
1956	14,403,130	120,562	308,335	14,223,357	169.2

Source: American Paper and Pulp Assn., Census Bureau.

UNITED STATES PAPERBOARD PRODUCTION

(In Tons of 2,000 lbs.)

	Container Board	Folding Boxboard	Setup Boxboard	Building Boards	Other Boards	Total Paperboard
1940	3,434,834	1,416,452	898,549	179,443	449,796	6,379,074
1945	4,131,107	2,092,344	721,087	894,830	1,074,368	8,913,736
1948	5,078,929	2,199,608	596,190	1,270,348	1,629,605	10,775,454
1949	4,681,054	2,084,415	617,249	838,729	1,734,757	9,966,542
1950	5,646,433	2,368,010	641,345	1,258,620	2,292,071	12,311,030
1952	5,766,462	2,192,903	687,599	1,314,809	2,263,847	12,225,620
1953	6,613,206	2,428,988	763,166	1,379,290	2,621,053	13,805,703
1954	6,432,250	2,484,725	710,302	1,506,998	2,551,760	13,686,035
1955	7,550,000	2,644,000	781,000	1,650,000	2,926,000*	14,037,000
1956	7,552,800	2,563,100	655,500	1,670,696	2,379,000	14,366,000

*—This includes 1,050,000 tons of special food board—a fast growing product which industry observers say is the field to watch. Production has more than doubled since 1946. Here are figures: 1946—434,000 tons; 1947—460,000 tons; 1948—443,000 tons; 1949—516,000 tons; 1950—655,000 tons; 1951—772,000 tons; 1952—799,000 tons; 1953—968,000 tons; 1954—941,000 tons.
Source: American Paper and Pulp Assn.

YEAR	KRAFT PAPERBOARD		SEMICHEMICAL PAPERBOARD		ALL OTHER PAPERBOARD	
	Tons	Percent	Tons	Percent	Tons	Percent
1925	20,700	.7	4,800	.1	3,099,500	99.2
1926	39,500	1.2	5,400	.1	3,343,800	98.7
1927	82,100	2.4	12,000	.3	3,387,000	97.3
1928	173,400	4.5	24,900	.6	3,672,900	94.9
1929	242,200	5.7	53,800	1.2	3,981,600	93.1
Avg '26-'29	134,300	3.6	24,025	.6	3,596,325	95.8
1930	294,100	7.4	70,000	1.8	3,593,000	90.8
1931	403,900	10.6	76,500	2.0	3,323,600	87.4
1932	452,600	13.6	65,900	2.0	2,801,300	84.4
1933	581,700	14.8	82,400	2.1	3,274,700	83.1
1934	626,700	15.8	85,000	2.2	3,250,900	82.0
1935	728,200	16.0	100,600	2.2	3,726,200	81.8
1936	878,400	16.4	115,300	2.2	4,343,000	81.4
1937	978,800	17.6	124,500	2.3	4,452,200	80.1
1938	1,161,900	23.5	100,100	2.0	3,676,700	74.5
1939	1,480,000	24.9	131,000	2.2	4,342,900	72.9
Avg '30-'39	758,630	16.7	95,130	2.1	3,678,450	81.2
1940	1,693,200	26.8	133,600	2.1	4,499,300	71.1
1941	1,998,500	25.3	201,400	2.5	5,701,900	72.2
1942	1,958,600	27.3	150,800	2.1	5,054,300	70.6
1943	1,859,900	24.3	247,500	3.2	5,554,800	72.5
1944	1,916,000	24.1	331,100	4.1	5,714,800	71.8
1945	1,976,200	24.9	300,800	3.8	5,661,200	71.3
Avg '40-'45	1,900,400	25.4	227,533	3.0	5,364,384	71.6
1946	2,032,600	23.9	398,600	4.7	6,061,200	71.4
1947	2,419,500	25.8	505,800	5.4	6,435,600	68.8
1948	2,816,500	29.4	486,400	5.1	6,285,300	65.5
1949	3,067,300	33.3	535,600	5.8	5,606,800	60.9
Avg '46-'49	2,583,975	28.2	481,600	5.3	6,097,225	66.5
1950	3,872,900	34.7	732,900	6.6	6,543,700	58.7
1951	4,115,200	34.6	853,000	7.2	6,923,000	58.2
1952	4,141,300	37.5	857,900	7.8	6,050,300	54.7
1953	4,829,200	38.5	1,056,000	8.4	6,659,000	53.1
1954	4,820,800	39.2	1,119,700	9.1	6,345,200	51.7
1955	5,661,900	40.3	1,366,200	9.7	7,009,600	50.0
1956	5,971,000	41.6	1,472,900	10.2	6,922,100	48.2

U.S.A. Kraft, Semichemical and All Other Paperboard Production—1925-1956 (in tons)

National Paperboard Association

U.S. PULP IMPORTS

Year	Chemical Tons	Value (in thous. of dollars)	Ground-wood Tons	Value (in thous. of dollars)
1925	1,332,522	$ 73,317	331,092	$ 8,517
1930	1,530,985	$ 73,962	299,256	$ 7,146
1936	2,049,722	$ 78,785	227,778	$ 4,051
1940	1,053,057	$ 55,474	170,909	$ 4,712
1945	1,526,647	$106,858	227,418	$ 8,936
1947	2,016,153	$238,126	290,514	$18,032
1949	1,554,320	$168,910	208,782	$12,099
1950	2,098,667	$224,358	286,308	$15,802
1951	2,046,311	$324,280	321,178	$26,414
1952	1,693,726	$252,803	242,006	$18,242
1953	1,894,216	$244,670	263,630	$18,445
1954	1,807,897	$251,595	242,865	$17,593
1955	1,958,422	$253,729	254,524	$18,620
1956	2,048,380	$276,504	270,916	$20,315

Source: U. S. Pulp Producers Assn., U. S. Dept. of Commerce.

U.S. WOODPULP EXPORTS

	Tons	Value
1930	48,426	$ 2,070,553
1935	171,710	$ 8,632,971
1939	139,504	$ 6,493,140
1940	480,938	$29,736,737
1943	300,700	$20,288,879
1946	39,361	$ 3,645,963
1949	122,133	$14,082,575
1950	95,693	$12,056,311
1952	198,685	$32,215,417
1953	161,687	$22,793,371
1954	441,863	$62,337,237
1955	632,914	$87,491,601
1956	530,682	$81,330,276

Source: U. S. Department of Commerce and U. S. Pulp Producers Assn.

PULP PRODUCTION—Western States (excluding Alaska)

Tons of 2,000 lbs. (except defibrated, exploded, and similar pulps)

Year	Tons	Year	Tons
1923	299,596	1946	1,753,348
1926	378,005	1947	2,046,432
1929	780,494	1948	2,176,238
1931	817,548	1949	2,128,526
1932	607,662	1950	2,517,966
1933	773,102	1951	2,938,540
1935	1,011,421	1952	2,946,599
1937	1,523,191	1953	3,124,608
1939	1,384,147	1954	3,467,000
1941	1,994,150	1955	3,799,000
1943	1,521,531	1956	4,001,000
1945	1,591,789		

Source: U. S. Pulp Producers Assn., Inc.

AVERAGE HOURLY EARNINGS U.S. PULP AND PAPER INDUSTRY VS. U.S. FACTORY AVERAGE

	Pulp and paper Hourly Earnings	U.S. Factory Hourly Earnings
June 1933	$ .407	$ .398
June 1935	.538	.555
June 1937	.619	.634
June 1939	.626	.631
June 1941	.728	.732
June 1943	.855	.959
June 1945	.901	1.038
June 1947	1.232	1.244
June 1948	1.368	1.340
June 1949	1.410	1.405
June 1950	1.466	1.453
June 1951	1.60	1.59
June 1952	1.68	1.65
June 1953	1.78	1.77
Dec. 1953	1.82	1.80
June 1954	1.83	1.81
Dec. 1954	1.88	1.83
Dec. 1955	1.99	1.93
Dec. 1956	2.13	2.05

Source: U.S. Bureau of Labor Statistics.

U.S. PULPWOOD STATISTICS Receipts—Consumption—Inventories

(In Thousands of Cords)

Year	Receipts Domestic	Receipts Imp'ts	Receipts Total	Consum.	Yr. End Invent.
1941	14,177	2,281	16,458	16,580	3,729
1943	13,581	1,712	15,293	15,645	2,846
1945	15,254	1,729	16,983	16,912	2,627
1947	18,529	2,084	20,613	19,714	4,563
1949	17,547	1,706	19,252	19,916	4,877
1950	20,712	1,834	22,546	23,627	3,615
1951	25,128	2,650	27,778	26,522	5,072
1952	25,045	2,315	27,358	26,462	5,949
1953	26,339	1,548	27,887	28,150	5,650
1954	26,973	1,624	28,597	29,201	5,058
1955	30,894	1,928	32,822	33,332	4,745
1956	35,196	1,973	37,169	35,852	6,229

Source: Bureau of the Census; except 1941-1943, by War Production Board; 1951-52—NPA, Pulp, Paper & Board Div.

CONSUMPTION OF WASTE FIBROUS MATERIALS BY U.S. MILLS

(In Thousands of Tons)

	Waste Paper	Rags	Straw, Flax and Other	Total
1939	4,366	468	692	5,526
1944	6,859	428	957	8,245
1946	7,278	403	980	8,660
1947	8,009	462	1,064	9,535
1948	7,649	425	1,075	9,149
1949	6,600	382	833	7,815
1950	7,956	442	998	9,395
1951	9,070	389	1,055	10,523
1952	7,881	325	871	9,007
1953	8,530	325	930	9,785
1954	8,064	317	895	9,276
1955	8,976	343	976	10,295
1956	8,860	300	883	10,124

Source: Pulp and Paper Sec., Forest Products Div., Office of Domestic Commerce and NPA, Pulp, Paper, and Paperboard Div.

Food Pack is Down; New Fiber Packages

This report is an annual exclusive feature of the WORLD REVIEW NUMBER–based on a survey by WESTERN CANNER & PACKER, companion Miller Freeman publication of PULP & PAPER.

The U.S. food-processing industries, after an all-time record production in 1956, are expected to be down slightly in output in 1957. This is being reflected in paper and board packaging.

As an accompanying table shows, every major category of the food pack gained in 1956. Especially noteworthy were increases in canned fruit and vegetable items, in frozen vegetables, and in frozen prepared or "convenience" foods.

The 1957 season is seeing moderate cut-backs in many canned foods, in some dried items, and in several of the frozen foods. The smaller packs are due in part to less favorable growing and harvesting conditions, and in part to adjustments by growers and processors to bring supply and demand into better relationships.

These curtailments adversely affected deliveries of fiber packaging materials during the early months of 1957. There is some evidence that purchases of packaging materials by the food packers were excessively reduced, however, and that the latter half of the year will see more than the normal seasonal increase in demand.

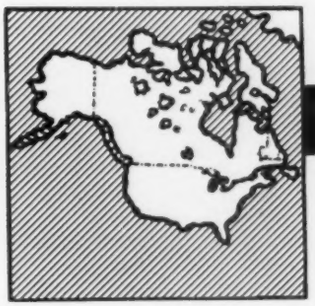
MULTI-PACK IDEA SPREADS . . . This year also is expected to see two potential packaging developments move over into the actual column. One of these is the multi-pack idea, already common in the beer and soft-drink fields. While six-packs of fruits, vegetables and juices may not become common, frozen citrus concentrate canners are introducing multi-packs of their juices, and nationality-food canners are assembling several varieties of their merchandise into single units.

The second important packaging development is the end-opening fiber shipping case. This type of case offers some saving in cost to the packer, since on the average 14% less board is required, and it is said to provide better in-transit protection, since cans sit on a level floor instead of resting on flaps. This year at least two firms are offering machinery for loading and sealing single-tier end-opening cases, and by 1958 double-tier units may also be available.

U.S. PROCESSED FOOD PACKS*

	Canned Foods (Million Cases) Fruits, Juices Vegetables	Canned Foods (Million Cases) All Other Canned	Glassed Foods (Million Cases)	Dried Foods Fruits, (Million tons) Vegetables and Nuts	Dried Foods Eggs, Milk	Frozen Foods (Million Pounds) Fruits, Juices, Vegetables	Frozen Foods (Million Pounds) Eggs Fish, Specialties
1936	173	136	79	1,227	122	92	279
1939	191	160	85	1,529	151	213	360
1941	264	223	114	1,675	229	319	484
1943	284	180	188	2,390	455	496	659
1945	321	235	235	1,672	485	749	699
1946	370	235	235	1,762	484	985	717
1947	311	244	240	1,879	464	729	668
1948	300	255	207	1,909	448	1,041	677
1949	308	245	186	1,891	568	1,171	664
1950	328	261	225	1,511	549	1,412	716
1951	373	265	230	1,724	430	1,636	735
1952	350	265	245	1,623	460	1,941	720
1953	345	263	266	1,674	NA	2,287	711
1954	338	274	275	1,692	NA	2,321	845
1955	357	295	307	1,627	NA	2,615	951
1956**	412	307	315	1,784	NA	3,137	1,100

** Source: WESTERN CANNER & PACKER, Miller Freeman Pubn., affiliated with PULP & PAPER*
*** Preliminary. NA: Not Available.*



NORTH AMERICA

Canadians Ready for a Pause

■

CANADA . . . . . .

But Immense Expansion Projects Still Being Built

Population: 15,861,000. *Per capita paper consumption* 280 lbs.
Paper mills: 93
Woodpulp (only) mills: 37
Other fiber pulp mills: 2.

Production (short tons)	1955	1956
All Paper	8,000,213	8,504,448
Chemical woodpulp	4,138,252	4,863,033
Mechanical woodpulp	5,429,162	5,679,983
Newsprint	6,196,319	6,468,815
Woodpulp exports	2,368,420	2,388,484

Principal grades made: Newsprint, kraft and sulfite papers, book, fine, board.
Principal exports to: U.S.A., United Kingdom, British Commonwealth.

After years of uninterrupted growth, the industry in Canada seemed slightly out of wind this year and ready to pause a while to catch its breath.

There was abundant evidence this spring of continued mounting production in most of its divisions, but the Canadian pulp and paper industry (No. 1 in the nation) showed a few unmistakable signs that, economically, it had reached a new high plateau and that during the next several months, at least, expansion might be at a somewhat more cautious pace.

While costs went on climbing, a few soft spots in the market became apparent. Big new mills were coming into operation, but fewer new ones were announced.

But in view of past experience, optimism prevailed. It had been frequently predicted that in the newsprint field, for instance, supply might at last meet demand, and so when that condition was reached in at least some markets there was no surprise, much less alarm. The industry was in excellent shape and in a mood to consolidate its gains.

The new situation did not escape notice from industry leaders. Robert M. Fowler, president of Canadian Pulp and Paper Association, declared not long ago: "For a decade we have seen—and indeed enjoyed—the greatest boom in history. A full belly maketh the heart glad. But a full belly requires time for digestion. Some day North America must pause to digest the immense capital investment expansion that still continues even after eleven years of unprecedented industrial growth."

For the first time in 1956, Canada's pulp and paper exports surpassed one billion dollars; incidentally, they accounted for 22% of the nation's total export trade.

Gross value of production in 1956 exceeded $1,400,000,000, three and a half times as great as at the end of World War II, and more than ever before Canada's overall economy depends on pulp and paper. Woodpulp production was 5.7% greater than in 1955, and the industry consumed about 470,000 tons of other fibers such as rags, straw and waste paper. Pulp was produced in greater volume except dissolving which declined 2%. Unbleached sulfate increased 20%, semi-chemical by 16%, and other basic grades by 5% to 6%.

Newsprint has long dominated the industry in Canada, and last year the mills achieved their goal of meeting the demand from their customers. Newsprint producers entered 1956 after a year in which they had faced a sudden and unexpected 8% rise in U.S. consumption. Canadian mills rose to the occasion by expanding their output and produced 5% more paper than they had in the previous year.

Canadian mills making paperboard and papers other than newsprint had a total production in 1956 of about 2,000,000 tons, valued at about $300,000,000. Paperboard production was up by 12%. Fine paper production was up 15%.

Canadian woodpulp production during the first quarter of 1957 was slightly higher than in the corresponding period a year ago. At the end of March output totalled 2,640,809 tons, compared with 2,580,799 tons in 1956.

Canadian paperboard and wrapping paper production during the first quarter was less than it was a year ago.

Expansion in the East

—Montreal, Quebec

Hub of the industry is still Quebec. Gross value of the industry's production in Quebec last year was close to $550,000,000, compared with Ontario's $375,000,000 and British Co-

New Mill for Eastern Canada

Bleached kraft from more than 500,000 acres of prime Quebec forests will come from Thurso Pulp & Paper Co., joint Singer Mfg. and Perkins-Goodwin Co. venture. Start-up time: January, 1958.

lumbia's $225,000,000. Quebec's total was more than 40% of the nation's.

Many Quebec newsprint mills increased capacity and pulp operations, notably at places such as LaTuque, extending facilities, too.

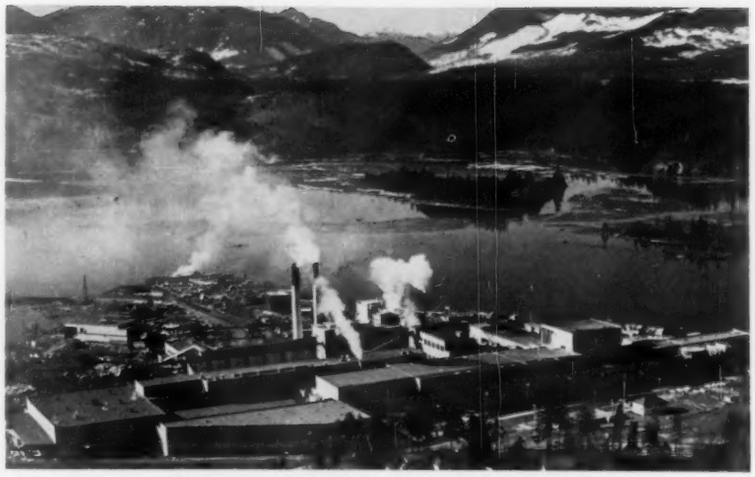
Canada's newest province—Newfoundland, which had been Britain's oldest colony—continued to make progress, and the year was marked by continuing negotiations to interest capital in a third mill to compete with the giant Bowater's Newfoundland and Anglo-Newfoundland Development Co.

Not to be outdone by its younger rivals, the maritime province region was active, but the biggest new development involving establishment of a mill at Lepreau, N.B., or nearby, remained in the study stage. If built, this mill will represent an investment of $50,000,000, from the U.S. and United Kingdom.

The early postwar period in Ontario that saw new mills springing into action at Marathon, Terrace Bay, Red Rock and Espanola was reflected this year and last in a new burst of construction at Dryden, Kenora and Fort Frances, Thorold and notably Fort William, where Great Lakes Paper Co. is engaged in a four-stage expansion program, with the first of two new 1957 paper machines in operation in June. At Red Rock, St. Lawrence Paper Corp.'s subsidiary again adds new capacity.

Abitibi Power & Paper Co. announced plans for a high speed newsprint machine for its Fort William mill. Dryden Paper Co. has doubled its production, with new bleached sulfate capacity.

Five new machines have been added at Ontario mills, and an indication of future growth was the action of Anglo Newfoundland Development Co. in taking up its option on pulpwood limits near Sioux Lookout, Ont., for a future $50,000,000 mill. There is a good chance for positive action this year on the proposed integrated pulp operation of Waskesiu Forest Products, a $60,000,000 enterprise headed by Vancouver and U.S. interests. This would be located near Prince Albert, Sask. The Saskatchewan government has completed an exhaustive forest survey with a view to interesting outside capital in a pulp mill, and important developments may materialize this year. In Manitoba, most expansion has been at Pine Falls. Just east of the Rockies, the $35,000,000 bleached sulfate mill of North Western Pulp & Power Co., backed by St. Regis Paper Co. and Alberta oil interests, went into production early in 1957.



New Picture of $70,000,000 Outlay on Alberni Canal

Three paper and board machines and pulp expansion are being installed at MacMillan & Bloedel forest products center, below rugged peaks on Vancouver Island. To be completed in 1958. New structures housing Beloit newsprint machines and kraft mill addition are in foreground.

Expansion in the West

—Vancouver, B.C.

This has been a year of fulfillment for the industry in British Columbia because some of the biggest projects are rapidly nearing completion. New mills in British Columbia represent an outlay of some $200,000,000.

MacMillan & Bloedel is spending nearly $70,000,000 at Port Alberni alone and, while the program will continue into 1958, some phases are now finished. Two 300-ton newsprint machines are being installed, sulfate pulp capacity is being doubled, and a board and paper machine is being installed.

In October 1957, British Columbia Forest Products expects to have its 420-ton bleached sulfate mill in production at Crofton. Elk Falls Co., subsidiary of Crown Zellerbach Canada, is engaged in a $30,000,000 expansion at Duncan Bay. Last year its kraft mill was completed, and noodle pulp is being shipped regularly to the CZ mill at Antioch, Calif., by specially designed bulk carrier. Another machine is being installed, increasing newsprint output to 500 tons a day. The kraft pulp mill will make 500 tons a day, and a 175 tons kraft bleach plant is under construction.

Powell River Co. brought its No. 9 newsprint machine into production early this year and acquired control of Brooks-Scanlon Inc. at Bend, Ore.,

ROUNDUP OF CANADIAN STATISTICS—1955-1956

	Production		*Exports*	
	1956	*1955*	*1956*	*1955*
Gross value of output	$1.4 billion	$1.3 billion	$1.040 million	$991 million
	Tons	Tons	Tons	Tons
Total woodpulp	10,543,016	9,967,641	2,388,484	2,368,420
Dissolving & spec. chem.	411,747	419,899	344,551	358,146
Bleached sulfite paper grades	674,765	637,408	443,530	463,056
Unbleached sulfite	1,834,325	1,738,413	379,893	368,525
Bleached sulfate	812,534	770,155	670,281	652,044
Unbleached sulfate	801,269	670,229	225,385	214,273
Other chemical	234,022	201,972	45,628	40,917
Groundwood	5,679,983	5,429,162	268,491	259,344
Newsprint	6,468,815	6,190,647	5,971,692	5,805,113
Containerboard	474,227	391,032	56,555	22,608
Boxboard	412,176	397,204	25,274	30,755
Total paperboard	886,403	788,236	81,829	53,363
Fine paper	248,005	215,306	16,712	13,506
Coated paper	29,167	26,198	1,006	1,097
Other printing paper	91,135	79,537	60,684	51,089
Special papers	122,171	113,292	6,437	5,787
Wrapping paper	280,591	257,870	14,309	14,985
Bldg. papers and boards	281,000	262,564	22,500	25,000

There are some slight duplications in the foregoing figures. Some paperboard and wrapping paper is used by the mills for packaging. Coated paper covers a tonnage that undergoes a further processing after it leaves the paper machine and thus is also included under other grades. Total woodpulp production includes screenings, but excludes defibrated and exploded pulp. In addition to woodpulp, the industry uses annually in the manufacture of paper some 470,000 tons of stock including waste paper, straw, rags, cotton linters, flax, leather, jute, rope, and other fibers.

with the intention of building a pulp or paper mill in the Deschutes Plateau of Oregon. The company still is considering expanding in the South and at Kitimat, B.C.

In a somewhat similar category are proposed mills of Celgar, Ltd., a subsidiary of Celanese Corp. of America, which has an agreement to start building within a year near Castlegar in the Kootenay district, and Western Plywood Co., awaiting stabilization of the forest management license program before proceeding with a pulp mill on Quesnel Lake.

All companies carried out improvements, notably Alaska Pine & Cellulose at Port Alice; Sidney Roofing & Paper Co., now transplanting its mill from Victoria to the Vancouver area and enlarging it, and Canadian Forest Products, which has created virtually a new bleached pulp operation at Port Mellon.

BRITISH COLUMBIA 1956 PRODUCTION

(Short Tons)

Newsprint	593,462
Sulfite pulp	119,077
Alpha and dissolving grades	179,262
Bleached sulfate	212,432
Unbleached sulfate	163,394
Box board	22,776
Tissue, building paper, felts, etc.	20,000
Groundwood for sale	5,238
Total production	1,465,522

Total value of pulp and paper production in British Columbia last year was $224,770,362, compared with $205,407,868 in 1955, and total tonnage was 1,465,522, compared with 1,407,561 in 1955.

Annual Pulpwood Review . . . . .

EASTERN CANADA

This Area Alone Uses $65,000,000 in Equipment

Montreal

While some 20,000 horses are still needed each year to help move the pulpwood harvest in Eastern Canada, the latest census of new-type loading and hauling equipment shows that about $65,000,000 worth of machines are in use, represented by about 15,000 individual units.

Mechanization has been making important strides in the Eastern Canadian pulpwood forests where a few years ago loggers depended on what would today be described as somewhat primitive tools.

Lightweight power saws especially adapted to the smaller pulpwood species of Quebec and Ontario have recently found favor, although handsawing is still widely practiced. Most advances in equipment have been made in the realm of log-loading and hauling, and the more extensive use of trucks has made it possible to place less dependence on the river drive as a means of transportation from woods to mill. Log driving still has its important place in the industry in Eastern Canada, but more and more the trend is towards all-season hauling, with sleigh-mounted pulpwood carriers augmenting trucks during the winter—a season which not long ago was devoted almost entirely to falling and skidding.

The experience of Abitibi Power & Paper Co. at Iroquois Falls, Ont., although probably not typical of the entire industry, gives an idea of how hauling methods in Eastern Canada have changed during the past ten years. Horses used to haul sleighs to the landings; these were replaced by tractor hauls, then truck-sleigh hauls and railroads. Today, the company depends on truck-trailer combination transportation.

"At one time every district within the division had its own particular method of moving the wood from the stump to the landing or mill," reports O. G. Larsson in a paper presented to the Woodlands Division CPPA recently. "In every instance a minimum of two handlings were required to accomplish this operation. The initial loading of the sleighs was done manually. The wood was then moved to an intermediate transfer point or landing. Here the logs were either unloaded to be rehandled later or transferred to a second carrier by jammer or by hand.

"In 1947-48, 0.6453 man days were required to move a cunit of wood. Last year, 1955-56, the haul required only 0.0426 man days to perform the same work. In other words, today's hauling operations take only one-sixteenth the number of men needed eight years ago. The conversion of the data for those same two years to a cunit-mile basis produces an even more startling variance.

"This has been accomplished by elimination of all intermediate stages and of all manual labor of loading, unloading and transferring. Once the wood has been skidded from the stump to the blazed line, which will be the location of the road, it will not be touched by hand. The logs are loaded by machine from the skidways onto the trailers which deliver them directly either to the mill or final water landing. The unloading at these points is also by machine."

WESTERN CANADA

Mobile Loaders, Tractors Coming into Use in Logging

Vancouver, B. C.

Pulpwood harvesting and transportation in British Columbia are similar to the methods employed in most of the Pacific states except that there is greater emphasis and dependence on delivery of logs and chips by water This is due to the fact that some of the most important pulpwood forests are on Vancouver Island and the Queen Charlotte Islands which, of course, involves a water haul either by raft or barge, and many of the pulp mills on the mainland draw their wood supply from Vancouver Island, or vice versa.

This comparatively cheap and convenient method of transportation has led to the organization of a highly efficient towboat and barging industry and without it the mills would be helpless. In recent years there have been several innovations in handling logs and chips for transportation across waterways. There has been a trend towards specially designed covered steel barges for chips and steel carriers with hulls similar to steamships equipped to carry loads of whole logs. These carriers have self-dumping devices which reduce handling time to a minimum and their seaworthiness and maneuverability make it possible to use them the year round, whereas in unprotected coastal waters raft-towing can be hazardous.

In British Columbia there is no distinction between pulpwood logging and the harvesting of saw logs or peeler stock for plywood plants. The various timber species usually occur in virtually the same forest stands and only when the logs reach the dump at tidewater are they sorted into various categories according to mill requirements, spruce and hemlock being the pulp species most generally used, although considerable fir and balsam are also used.

Use of power saws in falling trees is now practically universal in coastal forests, and the trend is away from railroad transportation to trucks because of the latter's greater flexibility in reaching altitudes that would not be accessible by rail.

Although the traditional high-lead system is extensively employed, especially in rough country, to haul in timber to loading points, more mobile loaders, power shovels equipped with heel booms, and tractors are coming into use, and this tendency will be increased as the average size of timber lessens and the loggers are obliged to climb steadily higher into the hills.

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MILL LOCATIONS

	Pulp Mills	*Pulp & Paper Mills*	*Paper Mills*	*Total*
Alberta	1	..	..	1
Newfoundland	1	2	..	3
Nova Scotia	2	2	..	4
New Brunswick	4	3	..	7
Quebec	12	34	9	55
Ontario	9	19	15	43
Manitoba	..	3	..	3
British Columbia	8	6	..	12
Canada	37	69	24	130

Source: Dominion Bureau of Statistics.

PULPWOOD PRODUCTION FOR CANADA BY PROVINCES

	1954	*1955*
Quebec:		
Cords	6,699,693	7,071,351
Value	$182,050,556	$182,820,217
Ontario:		
Cords	3,452,717	3,672,950
Value	$92,002,351	$93,272,401
British Columbia:		
Cords	1,362,109	1,746,317
Value	$33,175,299	$35,733,490
Other provinces:		
Cords	2,739,813	2,931,662
Value	$65,868,731	$69,464,826
All Canada:		
Cords	14,359,362	15,317,280
Value	$374,754,020	$381,290,934

CANADIAN NEWSPRINT CAPACITY AND PRODUCTION

(In thousands of short tons)

	Rated Capacity	*Idle Capacity*	*Operating %*
1925	1,715	193	88.8
1930	3,600	1,096	69.6
1935	3,914	1,163	70.3
1940	4,368	949	78.3
1945	4,301	1,042	75.8
1947	4,350	nil	101.1
1949	5,113	nil	101.2
1951	5,360	nil	100.7
1952	5,510	nil	102.9
1953	5,723	nil	100.
1954	5,920	nil	101.0
1955	6,190	nil	—
1956	6,242	nil	101.0

Source: Newsprint Association of Canada.

CANADIAN PAPER PRODUCTION

	Newsprint		*Total Paper*	
	Tons	*$ Value*	*Tons*	*$ Value*
1917	689,847	38,868,084	853,689	58,750,341
1929	2,725,331	150,800,157	3,197,149	192,989,252
1932	1,919,205	85,539,852	2,299,767	114,115,570
1941	3,519,733	158,925,310	4,524,776	241,450,292
1945	3,324,039	189,023,736	4,359,576	282,837,614
1948	4,640,336	402,099,178	6,063,646	582,346,000
1950	5,318,988	506,968,207	6,812,035	710,153,826
1952	5,687,051	600,515,000	7,201,800	838,105,108
1954	6,000,895	657,487,344	7,649,607	925,590,643
1955	6,196,319	688,338,369	8,000,213	981,439,247
1956°	6,468,815	700,000,000	8,504,448	1,000,000,000

Source: Dominion Bureau of Statistics.
° Estimated by PULP & PAPER.

CANADIAN PULPWOOD

(In Cords)

Year	*Production*	*Consumption*	*Exports*	*Imports*
1921	3,273,131	2,180,578	1,092,522	....
1925	5,092,461	3,668,959	1,423,502	....
1930	5,977,183	4,741,349	1,330,466	94,632
1935	6,095,016	5,005,083	1,109,873	19,940
1940	8,499,922	6,996,119	1,551,429	47,626
1945	9,145,673	7,478,508	1,671,298	4,133
1947	11,484,522	9,551,050	1,983,980	50,508
1948	12,497,926	10,256,549	2,317,346	75,969
1949	11,850,254	10,237,976	1,612,278	5,491
1950	12,873,476	11,138,578	1,734,898	28,220
1951	15,053,910	12,554,064	2,871,173	41,000
1952	14,102,670	11,609,407	2,493,263	30,784
1953	13,380,816	11,680,418	1,749,203	48,805
1954	14,254,332	12,475,600	1,778,732	105,030
1955	15,377,280	14,432,034	1,080,163	134,917
1956°	15,700,000	15,000,000	800,000	100,000

Imports not reported prior to 1928.
° Estimated by PULP & PAPER.
Source: Dominion Bureau of Statistics.

PRINCIPAL STATISTICS OF CANADIAN PULP AND PAPER INDUSTRY

Year	*Establishments*	*Capital*	*Employes*	*Salaries and Wages*	*Fuel and electricity purchased*	*Materials and supplies used*	*Gross Value of products*
	No.	*$*	*No.*	*$*	*$*	*$*	*$*
1919	99	275,767,364	26,647	32,264,208	12,503,197	54,084,801	137,912,502
1925	114	460,397,772	28,031	38,560,905	17,506,735	76,514,990	193,092,937
1931	103	630,176,540	26,669	34,792,013	22,927,919	63,947,678	174,733,954
1937	98	570,352,287	33,205	48,757,795	29,121,065	91,121,629	226,244,711
1943	106	667,458,143	37,020	71,199,422	36,211,064	143,956,462	345,653,470
1948	117	1,100,000,000	51,924	151,662,761	41,365,665	274,553,791	825,857,664
1949	123	1,100,000,000	52,050	157,703,868	41,370,633	272,681,606	836,148,393
1950	124	1,150,000,000	52,343	169,246,531	44,440,376	289,548,301	954,137,651
1951	126	1,200,000,000	57,291	213,169,906	75,625,718	421,280,139	1,237,897,470
1952	128	1,250,000,000	57,803	225,353,327	76,739,757	497,046,828	1,157,887,657
1953	127	1,300,000,000	58,194	235,741,660	80,379,515	499,350,994	1,179,934,934
1954	127	1,400,000,000	60,837	252,598,383	84,880,788	515,257,595	1,241,558,451
1955	128	1,550,000,000	62,500	262,598,000	91,040,773	546,079,000	1,326,938,138
1956°	130	1,550,000,000	63,000	265,000,000	92,000,000	550,000,000	1,200,000,000

° Estimated.

CANADIAN PULP AND PAPER PAYROLL DATA

	Total Employes	*Employes On Salary*	*Average Salary*	*Employes On Wages*	*Average °Wage*	*Total Salaries-Wages*
1920	31,298	2,669	$2,449	28,629	$1,352	$ 45,253,893
1939	31,016	4,382	$2,482	26,634	$1,271	$ 44,737,739
1943	37,020	5,384	$2,723	31,636	$1,787	$ 71,199,422
1947	49,946	7,706	$3,411	42,240	$2,443	$129,477,995
1950	52,343	8,578	$4,163	43,765	$3,051	$169,246,531
1952	57,291	9,493	$5,069	47,798	$3,899	$229,000,000
1953	58,194	9,394	$5,315	48,800	$3,808	$235,741,660
1954	60,837	9,689	$5,500	50,309	$4,000	$252,598,383
1955	62,205	9,933	$5,636	52,272	$4,004	$262,600,000
1956°°	63,000	10,500	$5,700	52,500	$4,200	$265,000,000

° Woods labor not included.
°°Estimate by PULP & PAPER.
Source: Dominion Bureau of Statistics.

NEWSPRINT EXPORTS FROM CANADA

(Short Tons)

	U.S.A.	Overseas	Total
1935	2,052,000	523,000	2,575,000
1940	2,586,000	657,000	3,243,000
1945	2,534,000	525,000	3,059,000
1950	4,724,000	214,000	4,938,000
1952	4,835,000	463,000	5,666,000
1953	4,885,000	455,000	5,720,000
1954	4,875,031	674,534	5,549,565
1955	5,070,211	734,902	5,805,113
1956	5,229,748	741,944	5,971,692

Source: Newsprint Association of Canada.

CANADA—PULP PRODUCTION

(Tons of 2,000 lbs.)

	Mechanical Tons	Sulfite Tons	Alkaline Tons	Total Tons
1920	1,090,114	654,273	188,487	1,922,774
1925	1,621,917	842,785	242,207	2,706,909
1930	2,283,130	1,076,804	188,253	3,548,187
1935	2,458,000	1,025,000	206,000	3,689,000
1940	3,305,484	1,480,545	399,267	5,290,762
1945	3,341,920	1,639,684	478,740	5,460,344
1947	4,275,269	2,027,532	689,435	6,992,236
1948	4,413,513	2,138,011	815,076	7,366,600
1949	4,718,806	1,991,459	855,784	7,566,049
1950	4,910,803	2,110,773	1,053,588	8,075,164
1951	5,125,043	2,533,481	1,463,705	9,122,229
1952	5,102,000	2,367,000	1,331,000	8,800,000
1953	5,122,537	2,398,543	1,440,517	8,961,597
1954	5,275,787	2,241,787	1,393,124	8,910,698
1955	5,429,162	2,795,720	1,642,356	9,867,238
1956*	5,679,983	2,920,837	1,847,825	10,448,645

Dominion Bureau of Statistics and Canadian Pulp and Paper Association.
* Estimated by PULP & PAPER.

CONIFEROUS STANDS

Estimated Stands of Accessible Conifers by Provinces

	Millions of cubic feet	Pulp Production Tons—1951
Newfoundland	13,095	†
Prince Edward Island	101	nil
Nova Scotia	2,939	†
New Brunswick	8,000	†
Quebec	45,693	4,315,465
Ontario	53,184	2,420,903
Manitoba	5,689	†
Saskatchewan	5,920	nil
Alberta	32,200	nil
British Columbia	100,917	1,277,082
Nfld., N.S., N.B. and Manitoba		1,659,566
Yukon	2,475	nil
Northwest Territories	3,132	nil
	273,598	10,150,547

† Figures for Nfld., N.S., N.B. and Manitoba are not published separately.
Sources: Federal Forestry Branch and Dominion Bureau of Statistics.

CANADIAN WOODPULP PRODUCTION BY PROVINCES

(Quantity in Tons—Value in Dollars)

	Quebec	Ontario	British Columbia	Other Provinces	Total
1945 Tons	2,887,176	1,468,682	520,571	724,385	5,600,841
1945 Value	$114,197,036	$62,596,260	$21,998,381	$33,081,445	$231,873,122
1948 Tons	3,902,072	2,226,124	688,209	858,674	7,674,079
1948 Value	$227,425,545	$153,870,832	$49,220,655	$55,449,132	$485,966,164
1950 Tons	3,922,543	2,297,518	776,896	1,476,067	8,147,014
1950 Value	$216,299,900	$156,390,753	$49,381,923	$80,511,349	$502,583,925
1952 Tons	4,192,047	2,308,722	915,634	1,552,606	8,968,009
1952 Value	$280,314,341	$182,773,000	$82,551,730	$104,382,109	$650,021,180
1953 Tons	4,163,068	2,323,509	1,070,863	1,552,606	9,077,063
1953 Value	$265,937,385	$177,713,471	$84,658,292	$104,382,109	$624,863,504
1954 Tons	4,315,465	2,420,903	1,277,082	1,659,566	9,673,016
1954 Value	$268,759,418	$183,381,040	$99,629,620	$104,146,660	$655,916,738
1955 Tons	4,491,139	2,602,298	1,363,761	1,693,340	10,150,547
1955 Value	$280,171,743	$196,235,632	$107,637,777	$109,357,679	$693,402,831
1956 Tons*	4,450,000	2,500,000	1,360,000	1,700,000	10,010,000
1956 Value*	$275,000,000	$190,000,000	$116,000,000	$110,000,000	$700,000,000

Source: Dominion Bureau of Statistics.
* Estimate by PULP & PAPER.

CANADIAN PAPER PRODUCTION BY PROVINCES

(Quantity in Tons—Value in Dollars)

	Quebec	Ontario	British Columbia	Other Provinces	Total
1945 Tons	2,292,442	1,267,796	334,502	464,836	4,359,576
1945 Value	$148,180,691	$86,395,223	$20,353,984	$27,907,716	$282,837,614
1948 Tons	3,240,623	1,837,510	425,104	560,409	6,063,646
1948 Value	$303,691,283	$187,182,675	$40,317,091	$51,155,793	$582,346,842
1951 Tons	3,511,669	2,019,235	513,165	1,181,202	7,225,271
1951 Value	$389,554,493	$251,918,611	$59,763,061	$122,793,484	$824,029,649
1953 Tons	3,542,987	2,018,843	632,556	1,182,140	7,376,526
1953 Value	$416,505,144	$263,409,878	$74,131,677	$133,811,774	$887,858,473
1954 Tons	3,667,794	2,067,041	683,384	1,231,388	7,649,607
1954 Value	$435,083,677	$271,952,011	$79,499,580	$139,055,375	$925,590,643
1955 Tons	3,789,087	2,225,109	725,096	1,260,921	8,001,213
1955 Value	$453,543,730	$298,099,787	$86,193,930	$143,601,800	$981,439,247

CANADA'S PULP EXPORTS

	Tons	Value
1921	527,222	$33,133,675
1926	1,003,081	52,077,122
1932	452,292	18,930,065
1937	870,711	41,815,731
1942	1,510,727	95,266,873
1947	1,698,712	177,802,612
1951	2,260,834	365,132,884
1952	1,902,059	291,863,498
1953	1,950,152	248,674,880
1954	2,180,416	271,418,005
1955	2,366,133	297,304,069
1956*	2,600,000	300,000,000

Source: Canadian Dominion Bureau of Statistics and Canadian Pulp and Paper Association.
* Estimate by PULP & PAPER.

FOREST CONSUMPTION

Average Annual Depletion 1945-1954

	000's of cu. ft.	% Utilized	% Depleted
Logs and bolts for domestic use	1,343,684	44.4	42.1
Logs and bolts for export	10,559	.4	.3
Pulpwood for domestic use	984,109	32.5	30.8
Pulpwood for export	170,574	5.6	5.4
Fuelwood	433,494	14.3	13.6
Ties, poles, pitprops, post rails	62,080	2.1	2.0
Miscellaneous	19,553	.7	.6
	3,024,053	100.0	94.8
Fire	166,010		5.2
	3,347,809		100.0

* Island of Newfoundland, but not Labrador, included since 1949.
[Figure for depletion does not include agencies other than fire.]
Source: Federal Forestry Branch.

CANADA'S FOREST RESOURCES—A NEW SURVEY—Merchantable and Accessible

Saw Timber (10" D.B.H. and Up)—in Millions of Feet Board Measure

	Newf'dland	Prince Edward Island	Nova Scotia	New Brunsw'ck	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia Coast	British Columbia Interior	All Canada
Softwood	3,127	65	4,849	5,000	38,181	42,775	815	580	7,000	76,108	33,630	212,130
Hardwood	—	40	1,261	1,500	14,019	11,529	1,630	1,010	2,080	*	*	33,069
Total All Species	3,127	105	6,110	6,500	52,200	54,304	2,445	1,590	9,080	76,108	33,630	245,199
Smaller Material (4" D.B.H.) in Thousands of Cords												
Softwood	31,902	560	23,167	60,000	450,495	261,515	9,900	3,200	74,400	13,922	172,364	1,101,425
Hardwood	—	240	5,363	30,000	176,108	300,380	19,090	50,130	36,000	*	*	617,311
Total All Species	31,902	800	28,530	90,000	626,503	561,895	28,990	53,330	110,400	13,922	172,364	1,718,736

* British Columbia forests contain considerable quantities of hardwood, but no complete inventory has yet been made.
Source: Dominion Forest Service.

CANADIAN FORESTS—1956 REVISION

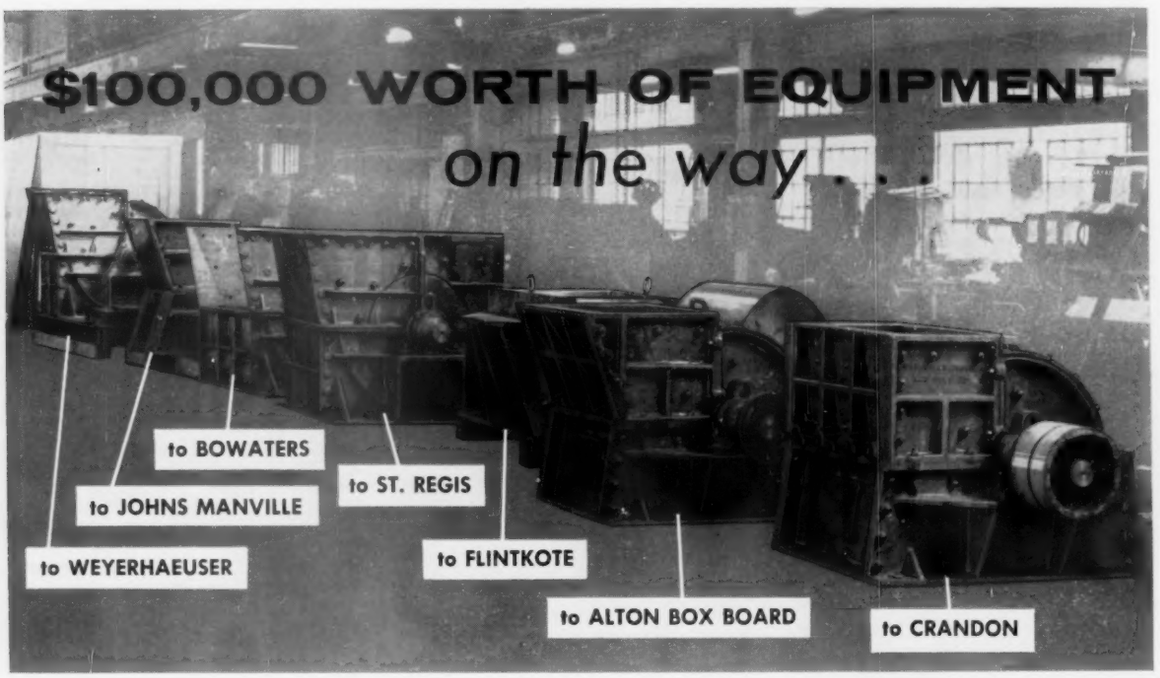
	Square Miles
Forested Areas of Canada*: (All except 275,800 square miles, lies within the ten provinces.)	1,567,517
Forested Areas Classed as Unproductive (Small trees in adverse locations not expected to reach merchantable size.)	739,863
Productive Forest Areas (Capable of producing continuous crops of timber.)	827,654
Productive Forest Not Presently Accessible	245,618
Accessible Productive Forests (Two-fifths bears trees large enough for use; the remainder is younger growth.)	582,036
Privately Owned Forests	
Farm wood lots	35,594
Others	67,988
	103,582
Cutting Rights Leased by the Crown:	
Pulp and paper licenses	182,840
Saw timber licenses	33,186
Timber sales	4,360
Permit berths	704
	221,090

* Excluding Labrabor.
Source: Federal Forestry Branch.

CANADA—PULP MADE FOR SALE
Latest Data Available

	Quantity		Selling value at mill		Average value	
	1955	1954	1955	1954	1955	1954
Kinds of pulp	tons	tons	$	$	$	$
Groundwood pulp						
Bleached	34,730	40,596	2,707,523	3,175,426	77.96	78.22
Unbleached	164,872	142,826	11,057,796	8,547,196	67.07	59.84
Sulfite, bleached						
Dissolving						
For chemical conversion	327,265	367,719	55,661,359	62,178,530	170.08	169.09
For paper	10,418	7,245	1,230,079	849,862	118.07	117.30
For other uses	7	1,290	800	238,474	114.28	184.86
Paper grades	383,402	313,400	47,918,366	37,591,842	124.98	119.95
Sulfite, unbleached						
Strong	243,779	226,344	27,427,498	24,618,384	112.51	108.77
News grade	113,740	99,259	12,242,369	10,646,135	107.63	107.26
Sulfate						
Bleached	396,546	362,445	51,408,333	45,910,043	129.64	126.67
Semi-bleached	40,877	30,402	4,372,252	3,085,782	106.96	101.50
Unbleached	235,820	206,920	23,247,504	19,832,787	98.58	95.85
Screenings, chemical						
Sulfite	10,067	13,079	402,409	465,173	39.97	35.57
Sulfate	1,512	1,126	97,269	67,529	64.33	59.97
Screenings, mechanical	1,005	3,168	21,579	70,620	21.47	22.29
All other pulp	49,263	43,664	6,222,614	5,321,475	126.31	121.87
Total	2,013,303	1,859,483	244,017,750	222,599,258	121.20	119.71

Source: Dominion Bureau of Statistics.



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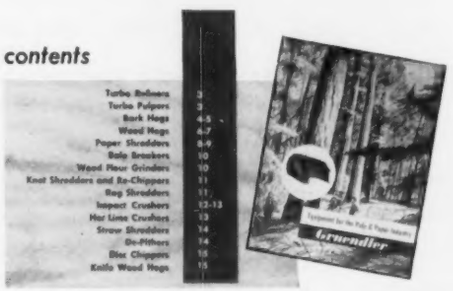

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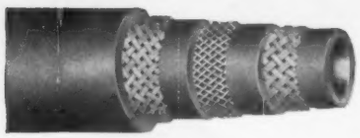


Thermoid Powerflex Steam Lancing Hose

Introduced 8 years ago in southern mills—cut operating costs 50%. Competitively priced. High safety factor.

Thermoid Acid Line Hose

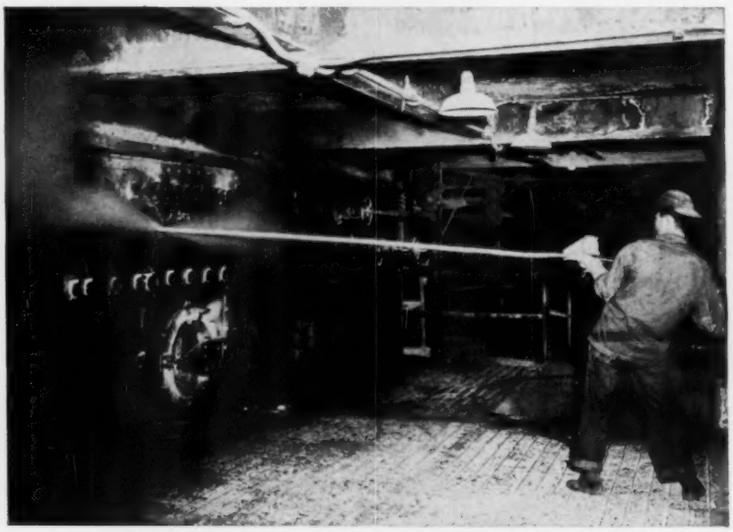
Replaces high cost stainless steel pipe to convey acids in the plant. Rubber covered flanges assure quick, positive, corrosion-proof connections.

Thermoid Precipitator Hose

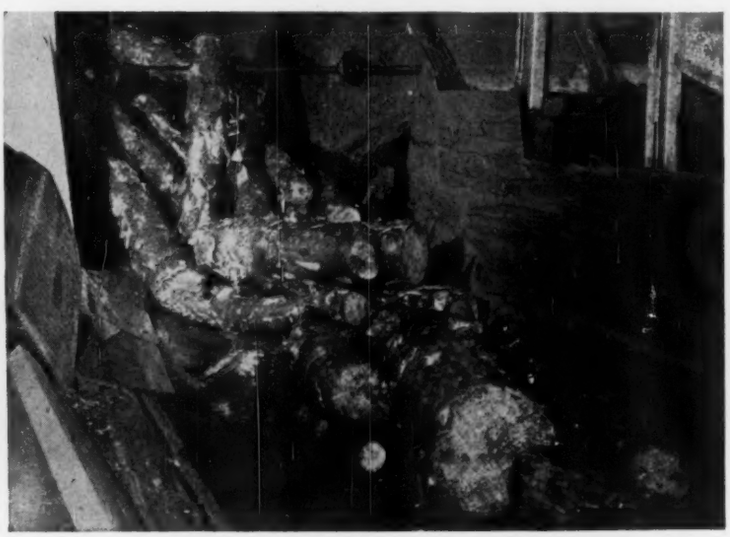
Made to withstand extreme heat and vibration for months on end. Cuts replacement costs on this tough job to a minimum.

Thermoid Conveyor Belting

Complete line provides economical handling of materials of every type. The right combination of carcass and cover assures maximum service per belt-dollar.



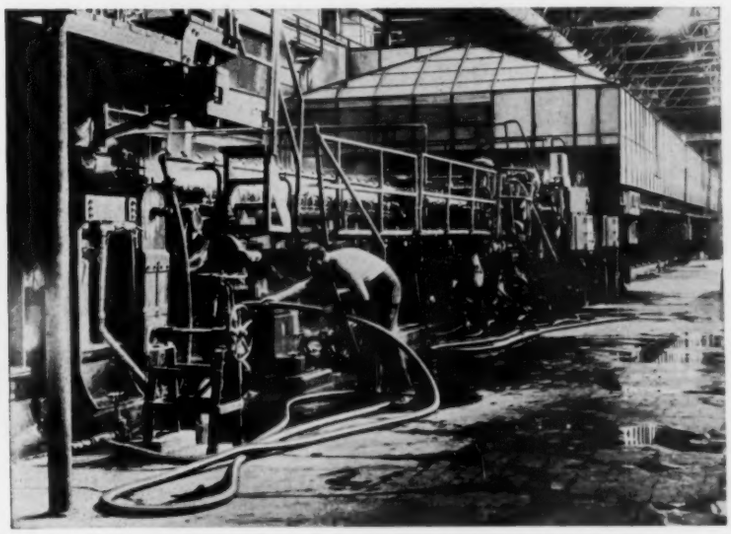
Thermoid Powerflex Hose delivers steam to lance for breaking down crust which forms on tubes. Hose is unaffected by high temperatures and high pressures.



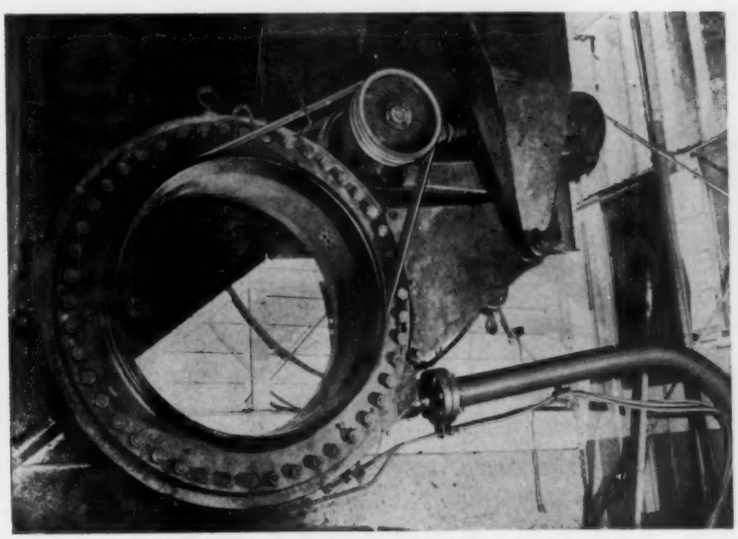
Thermoid Conveyor Belts help speed up the handling of logs in sorting room and on way to debarking machine. These belts are built to withstand repeated shock loads.

. . . Built For the Pulp and Paper Industry

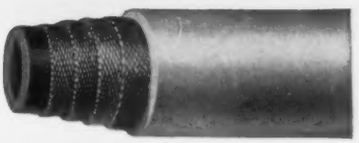
Your local Thermoid Distributor can help you select the right Thermoid Hose, Conveyor Belting, Multi-V Belts or Friction Materials that are built to meet the specific, exacting requirements of the pulp and paper industry. If you prefer, write direct for descriptive catalogs and complete details.



A constant stream of water through Thermoid Wash Down Hose keeps machines and floor free from slippery, resinous pulp ingredients.

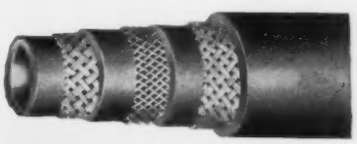


Logs move through ring driven by Thermoid V-Belts as Thermoid Rotary Hose supplies 1,500 gallons of water per minute at 1,500 psi.



Thermoid Wash Up Hose

Outlasts all others in this application —proof that long life can be built into hose . . . at a competitive price.



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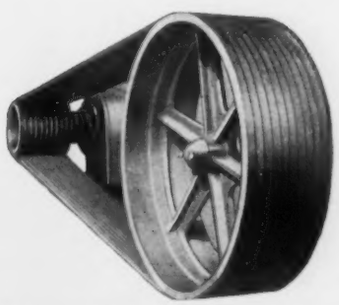

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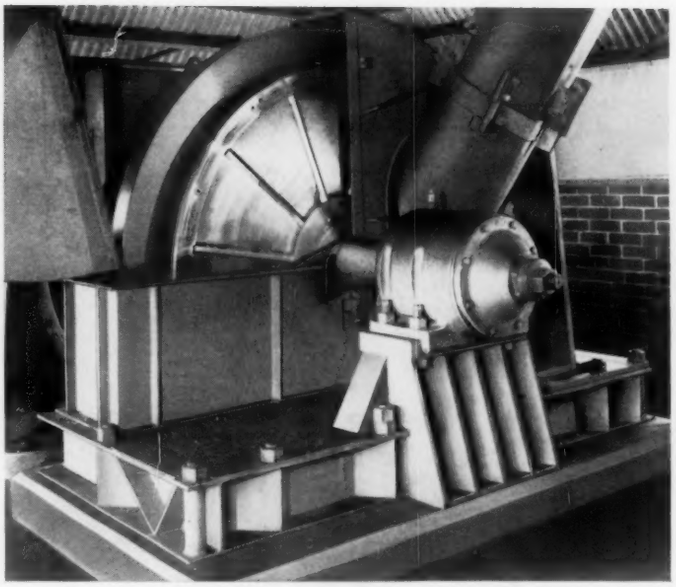

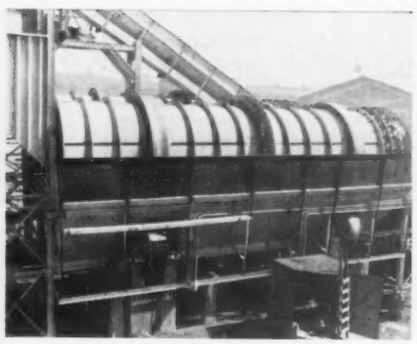

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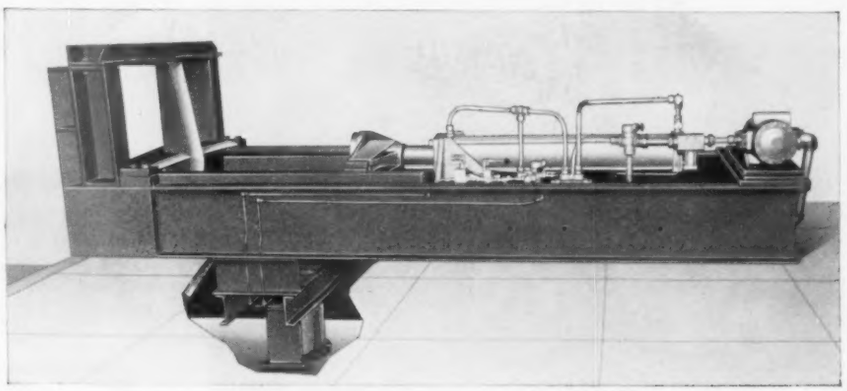

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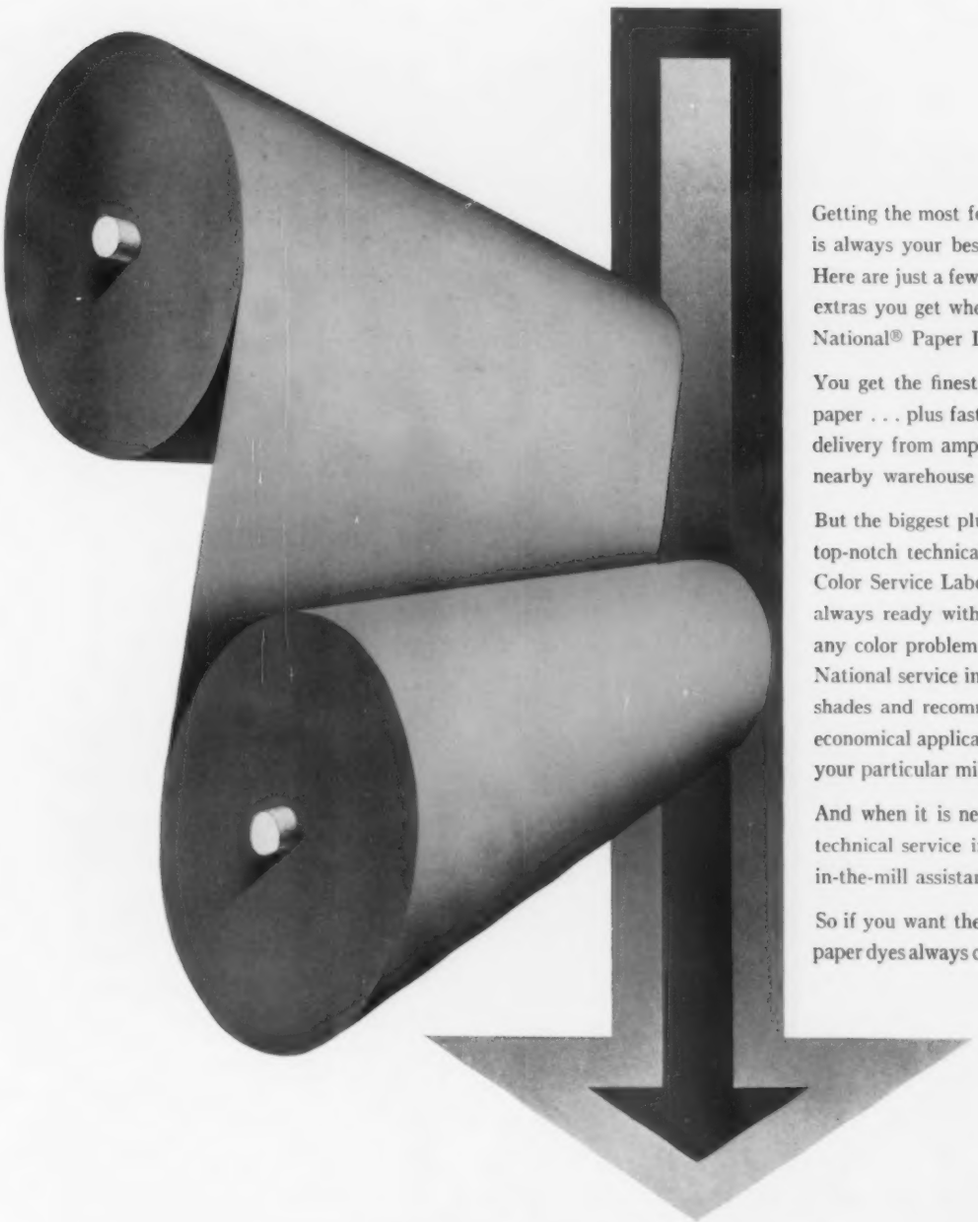

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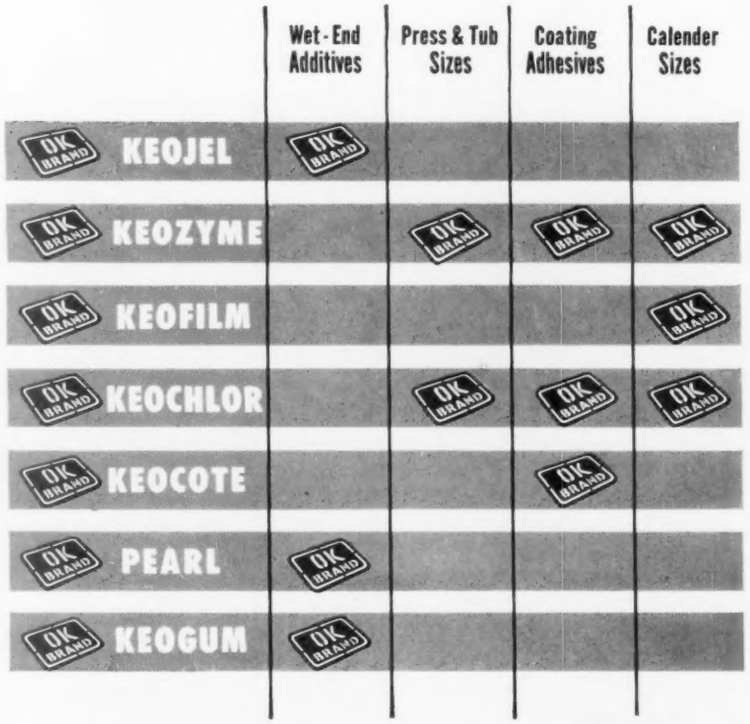

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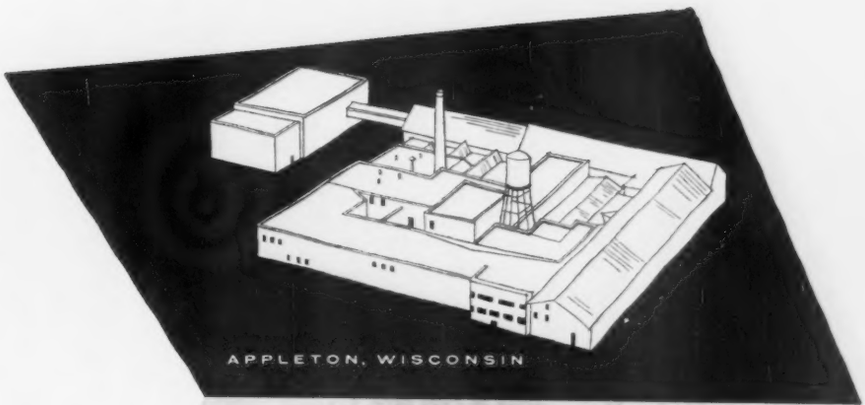

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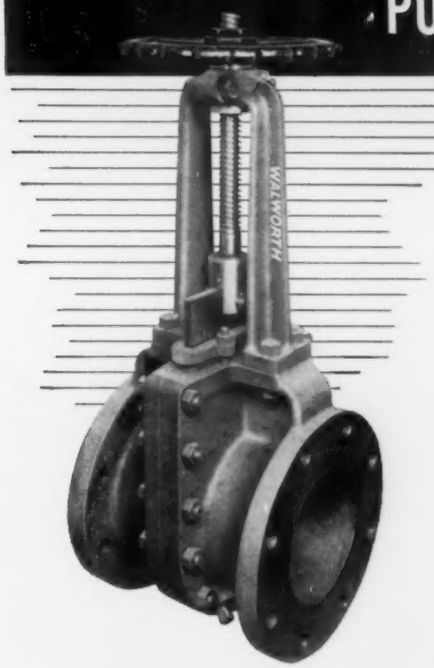
Complete lines of **WALWORTH** Valves for PULP and PAPER MILL SERVICE



Featuring the No. 757F Pulp Stock Valve!

Here's the valve that was developed especially for clogproof operation on stock lines. There are no recesses where pulp fibers can accumulate. Circular ports permit full flow. The sharp, flame-hardened edge of the semicircular stainless steel gate shears through the pulp stock to a tight, leakproof shutoff.

The No. 757F can be supplied in sizes 4" to 24" inclusive – in All Bronze, Iron Body with Bronze Trim, Iron Body with Stainless Steel Trim, All Stainless Steel construction. Complete information is available from your nearby Walworth Distributor – or – write Walworth direct for a free copy of the booklet, "Walworth Valves for Pulp and Paper Mill Service".

and including these valves for "across-the-board" use!

WALWORTH BRONZE VALVES. These standardized lines of bronze valves provide an unsurpassed system of interchangeability of parts. Drastically reduces inventory problems.

WALWORTH PRESSURE-SEAL CAST STEEL VALVES. Ideal for high-pressure, high-temperature steam and boiler feed service. Internal line pressure is utilized to maintain a tight, leakproof body-to-bonnet connection, reducing bulk and weight of valve.

WALWORTH No. 716 NI-RESIST SADDLE STYLE GATE VALVE. The OS&Y design prevents the fluid in the line from coming in contact with the stem threads. This design meets the requirement for a line of valves in small sizes for pulp and paper mill service.

WALWORTH No. 725FS OS&Y, FLANGED, SPECIAL ALLOY WEDGE GATE VALVES. Designed especially to retard caustic corrosion in the pulp and paper industry.

WALWORTH 928FS SPECIAL ALLOY SWING CHECK VALVES. Designed for the severe corrosive services encountered in the pulp and paper industry.

WALWORTH LUBRICATED PLUG VALVES. Easy turning — quick operating. Lubricant can be renewed while the valve is in service. Lubricant completely surrounds the plug ports assuring a tight seal against leaks.

WALWORTH also offers Plastic Valves and Fittings, and Walseal® Valves and Fittings. Walseal products have factory-inserted rings of silver-brazing alloy in threadless ports.

WALWORTH

Pulp and Paper Mill Division
60 East 42nd Street, New York 17, N. Y.

Walworth Company of Canada, Ltd., Toronto

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

Simplify control problems...

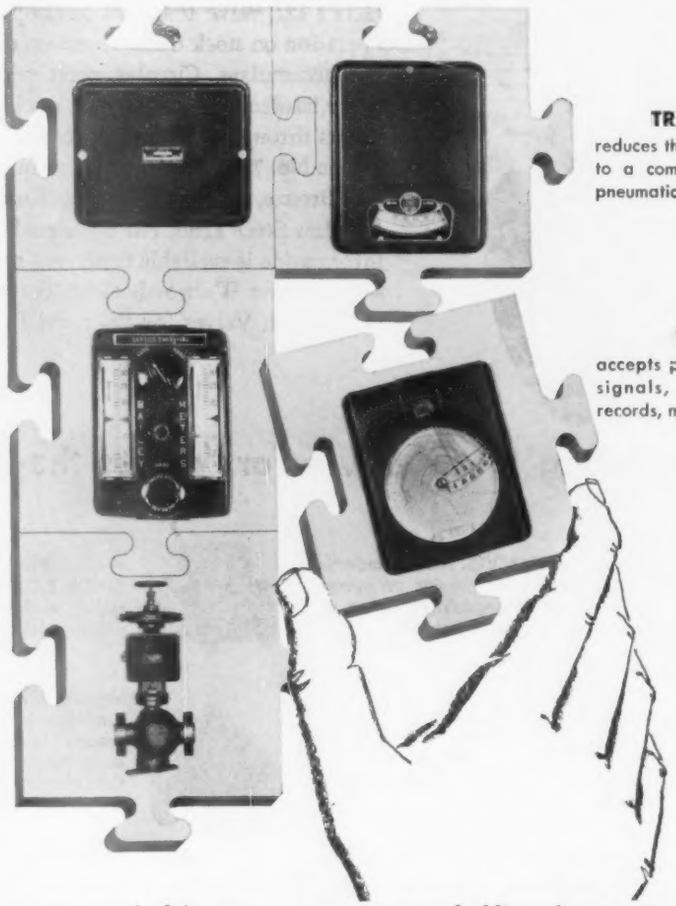
with the Bailey Building Block Method

Control problems are greatly simplified when you attack them using the Bailey Building Block Method. In a nutshell, the method consists of using standard components that fit together like building blocks. Virtually any control requirement can be handled by selecting standard components. Here are the parts you use and the functions they perform.

CONTROL RELAY
takes signals from the transmitter and computes corrective action in terms of pneumatic signals.

SELECTOR STATION
gives operator choice of hand or automatic control including set-point or bias adjustments.

POWER UNIT
is the "muscle" of the system. It performs whatever precise mechanical action is necessary to achieve control.



TRANSMITTER
reduces the measured variable to a common denominator, a pneumatic or electric signal.

RECEIVER
accepts pneumatic or electric signals, indicates and/or records, measurements.

Not all these components are required in every control system. You buy only what *your* system needs. When you change processes or add more automatic control, you can add additional standard components. Sometimes you may want to build a whole new system, re-using some of the existing components and adding other new ones. Spare parts inventory and maintenance training are reduced.

Hear the complete story of the Bailey Building Block System. Find how it can solve your control problems. See your Bailey Engineer or write for more information.

P40-1

BAILEY BUILDING BLOCK METHOD

BAILEY METER COMPANY

PULP AND PAPER DIV., 1037 IVANHOE ROAD, CLEVELAND 10, OHIO

In Canada—Bailey Meter Company Limited, Montreal

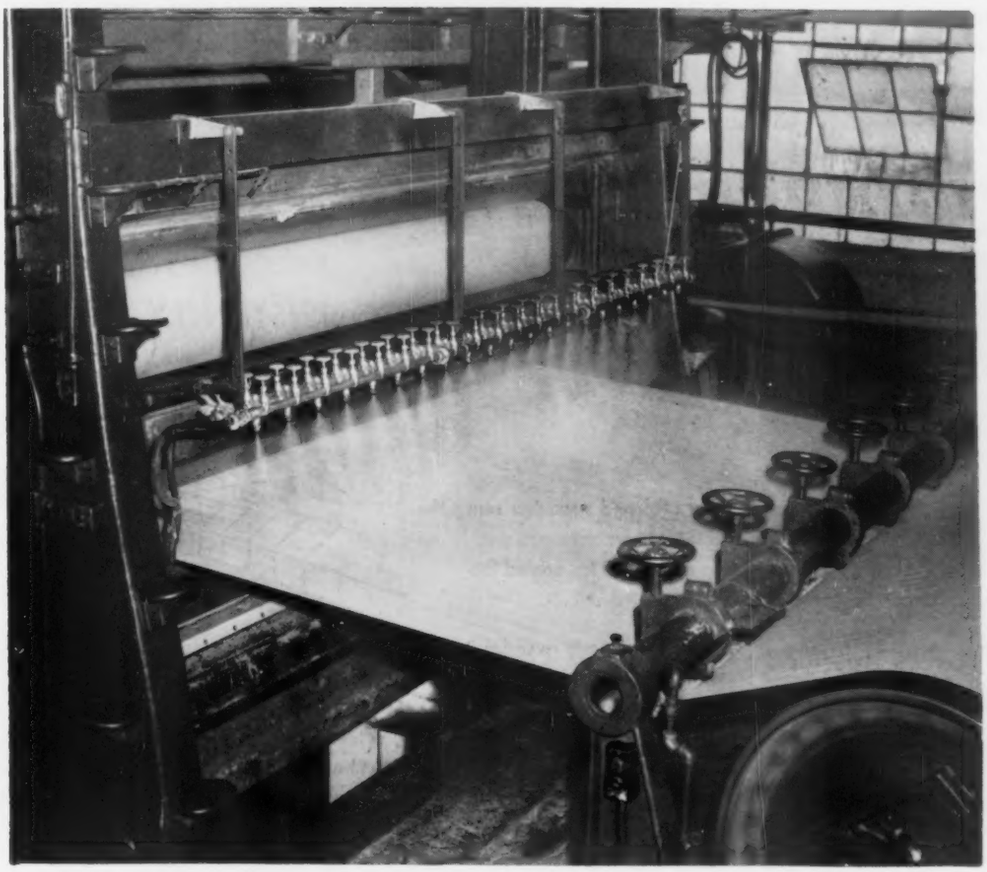
RESULTS IN: FLEXIBILITY, SIMPLICITY, ECONOMY

BAILEY METERS

VAPO SYSTEMS COMPANY

129-34 West Home Avenue
VILLA PARK, ILLINOIS

PAPER MILL ENGINEERS **PAPER MILL EQUIPMENT**



PAPER CONDITIONING with Vapo Systems is the only modern, economical, and efficient method of conditioning paper in the process of manufacture. Any degree of "moisturization" can be secured, at any machine speed, uniformly across any sheet trim size.

In addition to conditioning the sheet with moisture under speed, Vapo Systems are also designed to improve sheet finish by applying Starches, Clay, Wax and Oil Emulsions, Plasticisers and many other chemical solutions before the calendering operation.

256 successful installations of Vapo Systems are in operation in most of the major paper mill chains and progressive individual mills. Vapo Systems installations have proven themselves a good investment. Mill records show that every installation of Vapo Systems has paid for its entire cost within 6 months.

A LONG TERM INVESTMENT. The purchase of Vapo Systems should not be considered as merely the buying of just so much equipment—it definitely fills a present day need and provides an added feature of many years of successful operation at a profit.

Manufacturers of kraft, heavy, fine paper, tissue, chip board, and .009 corrugating medium, have discovered that the installation of Vapo Systems rank among the best investments they have made in equipment.

The waxing, asphalt laminating, embossing and coating fields too, have found that Vapo Systems returned their cost in a short period of time. This is especially true where paper is dried out to a certain extent in the processing work and need to be "remoisturized" before being put to their end use.

In the matter of converting, processing, and printing, Vapo Systems is most helpful for more pliable wax paper, better printing with water set inks to eliminate static and curl in printing processes. The use of Vapo Systems is a definite asset.

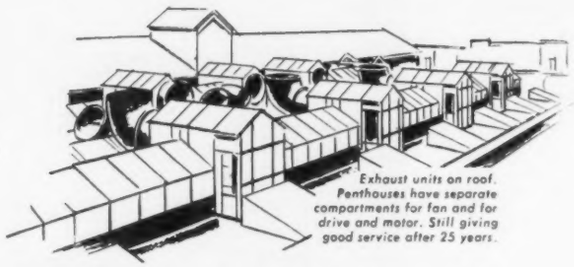
WRITE FOR FURTHER INFORMATION. Our Engineering Department will be pleased to discuss your paper production problems with you. Vapo Systems are designed to meet any operating specifications management desires. In many cases, we can develop special applications of Vapo Systems to improve your operating procedures. We will be pleased to answer any inquiry. No cost or obligation of course. Write for new Brochure.

ROSS Air Systems

Serving the Paper Industry Since 1921

ENGINEERING ..... CONSISTENTLY SOUND

CONSTRUCTION ... CONSISTENTLY DURABLE



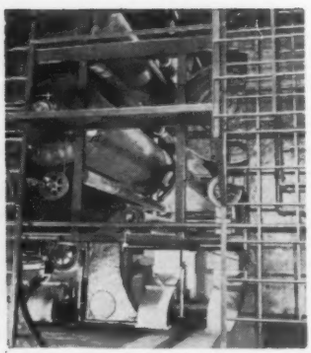
Exhaust units on roof. Penthouses have separate compartments for fan and for drive and motor. Still giving good service after 25 years.

In a very real and practical sense the words AIR and ROSS are synonymous.

To these could well be added the phrase SKILLED ENGINEERING.

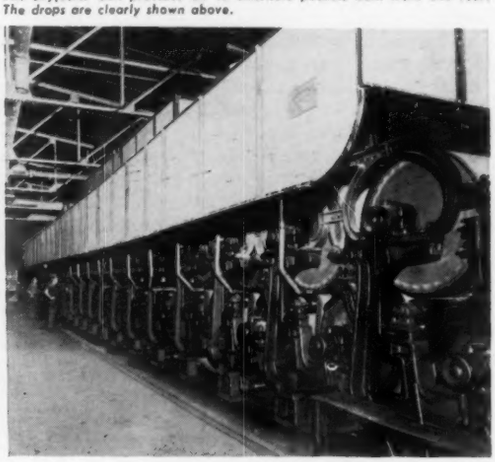
Since the early twenties Ross Engineers have been serving your industry in connection with the ever increasing use of air. They were among the first to demonstrate the importance of skilled engineering in the application of air to the production of pulp, paper and board. Four basic values have always been their targets: better end product, lower production costs, lower maintenance, and last but by no means least, better working conditions.

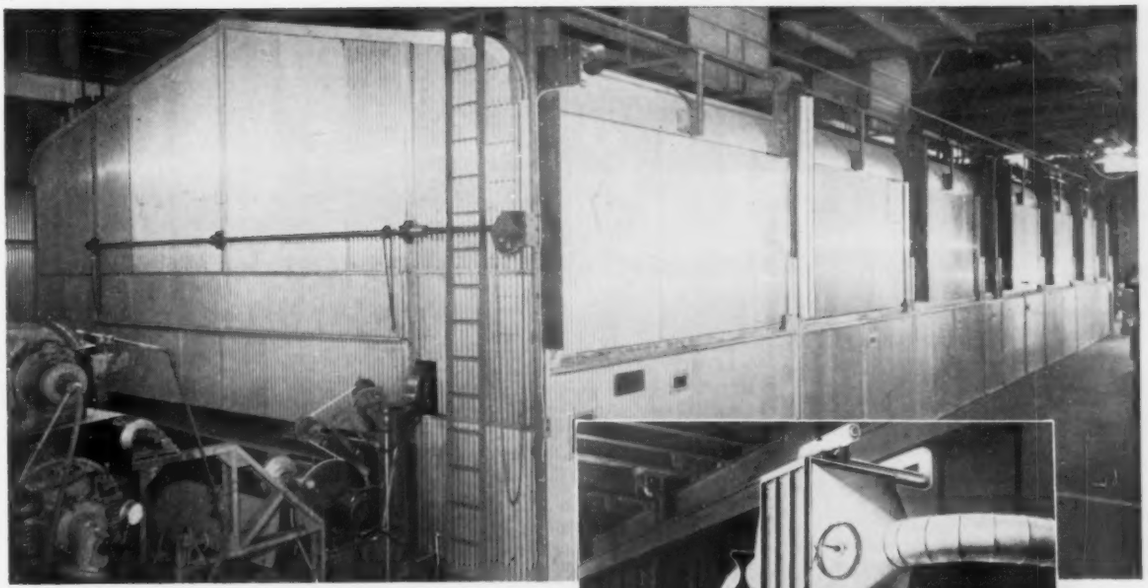
This calls for an understanding of the several important related variables and how to weld them into an efficient AIR SYSTEM. It calls for an understanding of temperatures, humidities, dew points, pressures, circulation,



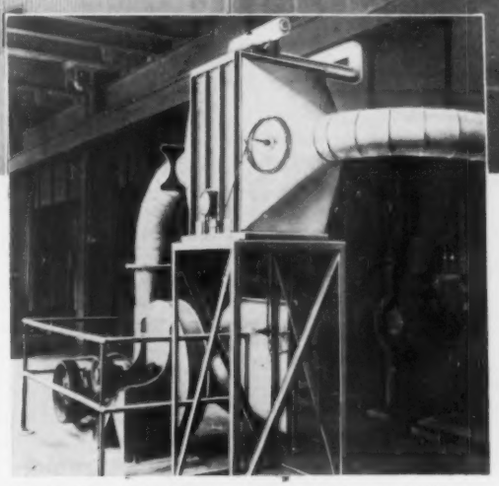
Vapor absorption applied to stack dryers. Cross nozzles are equipped with nipples and hollow frames have converging stub nozzles.

The Dryjector unit provides air to alternate pockets both front and rear. The drops are clearly shown above.





ROSS-HOOPER totally enclosed hood showing end and side panels. Side panels rise automatically in case of break.



Ross-Grewin apparatus takes up little space. Here shown are the filters, compressor and heaters at the rear side of the machine.

contact areas, heat removal and how to coordinate all these controlling factors.

Perhaps it is an appreciation of these skills and of the single overall responsibility of engineering, construction and installation that has led to the great preponderance of ROSS Air Systems throughout the industry. Perhaps it is an appreciation, too, that it is risky business *not* to see to it that the best talent available takes charge of these problems.

During the past 35 years Ross Engineering Corporation and its Canadian Affiliate, Ross Engineering of Canada Limited, have designed, constructed and installed AIR SYSTEMS in many mills. Large installations during the past 6 months include projects for:

Ecusta Paper Div. of Olin-Mathieson Chem. Corp.
Bowater's Newfoundland Pulp and Paper Mills Ltd.
St. Lawrence Corp.
Union Bag-Camp Paper Corp., Camp Div.
Georgia-Pacific Paper Co.
International Paper Co.
Buckeye Cellulose Co.
Nekoosa-Edwards Paper Co.
Whippany Paper Board Co.
Dierks Paper Co.
Champion Paper & Fibre Co.

THE ROSS GROUP OF COMPLEMENTING SERVICES

J. O. Ross Engineering Corporation, New York
Andrews and Goodrich Division, Boston
Ross Engineering of Canada Limited, Montreal
Ross Midwest Fulton Corporation, Dayton
Carrier-Ross Engineering Company, Ltd., England
John Waldron Corporation, New Brunswick, N. J.

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444 Madison Avenue • New York 22, N. Y.
ATLANTA • BOSTON • CHICAGO
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EUROPE

Demand Increases on Continent

■

WEST GERMANY . . . . .

Has Healthier Economy Than Most European Countries

Population: 52,799,000, includes West Berlin; *Per capita paper consumption:* 128 lbs. *Paper Mills:* 348; *Woodpulp mills:* 23; *Straw or vegetable fiber mills:* 3.

Production (short tons)	*1955*	*1956*
Paper	2,766,438	2,955,438
Chemical woodpulp	668,719	681,706
Groundwood	593,986	642,675
Straw & other pulp	48,448	47,154
Paper imports	453,573	491,912
Paper exports	77,336	94,719
Woodpulp imports	462,659	480,256
Woodpulp exports	50,170	48,635
Principal paper grades made:		
Newsprint		311,993
Kraft		180,088
Sulfite		768,297
Book and Writing		573,665
Paperboard		746,788
Special papers		374,607

Principal paper imports from: Finland, Sweden, Austria, Netherlands, U.S.A.
Principal woodpulp imports from: Sweden, Finland, Austria, U.S.A., Norway
Principal paper exports to: U.S.A., Netherlands, Brazil, Denmark
Principal woodpulp exports to: Austria, Italy, Netherlands

—Wiesbaden

West Germany is in a far better economic and financial position than many other European countries. While inflation continues, demand remains strong. Her exports have been rising more rapidly than imports, giving the country a favorable foreign trade balance estimated at DM 3,000 million ($714,300,000) for 1956.

In the pulp and paper industry, however, West Germany remains an importer rather than an exporter. In 1956 her paper imports were 491,912 tons, an incease of almost 40,000 tons over 1955. In the same period pulp imports rose from 462,659 tons to 480,256 tons last year. Some increase in pulp imports is expected in 1957, but, in the overall European economy, it probably will not be sufficient to offset the anticipated decline in England.

WALDHOF PRESIDENT PREDICTS . . . Paper production in West Germany was higher last year than in 1955, but the increase was not as great as in previous years. In the words of Friedrich Dorn, president, Zellstofffabrik Waldhof, one of the biggest paper companies: "The rate of increase in production both of pulp and paper has declined from the preceding year, as was the case in nearly all the important producing countries of the world with the exception of Canada and Japan. This general experience may be attributed to a normalization of the economic growth after a couple of years of exceptionally high increase rates. It may well be that in one case or the other a further moderation in growth will take place this year, but as far as Germany is concerned, the use of paper and board is expected to expand still further at a considerable rate in view of the fact that per capita consumption still lags behind that of other European countries such as Great Britain, Sweden, Finland, Switzerland and The Netherlands."

DR. FRIEDRICH DORN, who succeeded HANS C. RADEMACHER as President of Zellstofffabrik Waldhof in Wiesbaden.

Per capita consumption of paper in 1956 rose to 128 lbs., seven lbs. more than in 1955. Per capita newspaper consumption went up from 15 lbs. in 1955 to 16 lbs. in 1956. The average is still far below comparable figures for the U. S., 77½ lbs.; Great Britain, 40 lbs.; and France, 23 lbs.

Wallpaper production climbed steeply in 1956. Total output was

WEST GERMANY—PAPER PRODUCTION

(In Thousands of Short Tons)

	Woodfree Book and Writing	*News*	*Kraft*	*Total Paper (Includes other grades)*	*Paper Board*
All Germany:					
1939	242	504	278	2,956	1,057
West Germany:					
1949	35	140	123	983	407
1950	69	187	145	1,258	464
1951	64	178	157	1,438	548
1952	68	191	111	1,382	487
1953	86	223	151	1,622	548
1954	100	251	160	1,889	648
1955	101	271	178	2,059	714
1956	110	312	180	2,209	747

WEST GERMANY—WOODPULP PRODUCTION

(In Thousands of Short Tons)

	For Paper		*Rayon & Dissolving*	*Straw-Esparto*	*Total Chem.*	*Ground Wood*
	Sulfite	*Kraft*				
All Germany:						
1939	1,022	130	302	94	1,545	1,150
West Germany:						
1949	343	3	97	23	466	362
1950	444	1	128	36	610	435
1951	468	1	179	46	694	506
1952	425	1	135	42	603	488
1953	445	1	170	47	663	525
1954	534	—	183	54	771	645
1955	457	—	212	48	717	594
1956	462	—	220	47	729	643

worth DM 120 million ($28,572,000), an increase of 55% over DM 77.6 million in 1955. Exports rose from a value of DM 3.7 million ($880,970) in 1955 to DM 7 million ($1,666,700) in 1956. Manufacturers hope to keep prices stable in 1957. Their profit margins are sufficient to absorb the slight increase in raw material paper price that is now being discussed between wallpaper manufacturers and paper producers.

Finland kept its first place as supplier of pulpwood to West Germany, even though imports from this source fell by over one-third. Yugoslavia provided most of the additional volume required to offset the lack of Finnish timber; half of the pulpwood imports came from these two countries.

NEW INSTALLATIONS . . . In previous years, the increase of paper production in West Germany was mainly due to better utilization of existing capacity. In 1955, optimum capacity was reached nearly everywhere. In some sectors an increase in production was possible only by installing new machinery. This has been difficult to achieve because of high costs and a shortage of investment capital.

WILHELM J. FELDER (left), Sales Mgr., Exports, Papierfabrik at Baienfurt, and **HERMAN HAUG** (right), Director, recently returned to West Germany after a tour of U.S.A. boxboard mills. They were particularly interested in folding boxboard.

German Visitors at Coating Conference in Milwaukee, Wis., U.S.

From left are BOB C. HYDELL, The Mead Corp; KLAUS SCHEUFELEN, president, Papierfabrik Scheufelen; HERBERT BRINTZINGER, director of research; HERBERT DOBRIKCH, chief engineer, Papierfabrik Scheufelen, and ANDRE PELLETIER, Mead. Visitors use Mead machine coating process in their mill near Stuttgart; were visiting Mead's Chillicothe, O., and Kingsport, Tenn., mills in U.S.A.

Feldmuhle Papier und Zellstoffwerke, A.G., which lost 75% of its best installations when Germany was divided into Eastern and Western zones after WW II, is modernizing its cardboard mill, Kartonfabrik Arnsberg. A new building for the steam power station with steam output conditions of about 2,350 lbs./sq. in. and 1130° F. was completed in Sept. 1955, and was followed by installation of new machinery. No. 2 cardboard machine was rebuilt, improving and increasing its production. No. 3 cardboard machine is being installed and will nearly double the output of the mill. It is scheduled to begin operating by the end of 1957.

Feldmuhle's Reisholz (newsprint) mill also got a new steam power plant in 1955, rated at 2,204 lbs./sq. in. at 1,121° F. Other improvements completed at Feldmuhle mills in recent years are enlargement and improvement of technical installations at the Uetersen paper mill; a modern paper machine, automatic converting machine and high-pressure steam boiler and turbine at Flensburg; and a new raw material storage room and modern equipment in the processing and finishing departments at Oberlahnstein.

Europa Carton A.G., of Hamburg, the West German subsidiary of Container Corp. of America, is building a new plant at Hoya an der Weser in North Germany.

PACKAGING SHOW . . . Packaging machines and materials will be the feature of an International Packaging Show to be held March 2-9, 1958, in Dusseldorf.

■

WEST GERMANY—PULPWOOD

(In Thousands of Cords)

	Produced	*Imported*	*Total Received*	*Total Consumed*
1939 (All Pre-war Germany)	1,986	930	2,916	3,390
1949 (U.S., British Zones).....	876	69	945	844
1950 (West Germany)	1,082	216	1,298	1,290
1951 (West Germany)	1,364	384	1,748	1,489
1952 (West Germany).....	1,074	381	1,455	1,363
1953 (West Germany)	966	294	1,260	1,461
1954 (West Germany)	1,329	470	1,799	1,682
1955 (West Germany)	1,281	685	1,966	1,718
1956 (West Germany)	1,307	700	2,007	1,860

WEST GERMANY—PULP IMPORTS AND EXPORTS

(in short tons)

	Imports			*Exports*			
				Bleached	*Unbleached*		
	Sulfate	*Sulfite*	*Mechanical*	*Sulfite*	*Sulfite*	*Straw*	*Dissolving*
1955	275,662	117,994	23,462	12,927	17,164	4,450	16,170
1956	294,688	126,629	20,506	8,634	16,622	4,715	18,665

UNITED KINGDOM . . . .

Production Down Slightly From Last Year's Record

Population: 51,208,000. ***Per capita paper consumption:*** 180 lbs.
Paper and board mills: 209. ***Woodpulp mills:*** 8. ***Straw, other fiber mills:*** 73.

Production (short tons)	*1955*	*1956*
Paper and board*	3,624,559	3,602,647
Chemical woodpulp	16,579	11,000
Groundwood pulp	132,105	72,000
Paper, board imports	1,219,110	1,163,200
Paper, board exports	289,667	299,284
Woodpulp imports	2,512,322	2,464,722

*Does not include fiber building board.

Principal paper grades made: Book, writing, paperboard, newsprint.
Principal paper imports from: Canada, Sweden, Netherland (strawboard).
Principal woodpulp imports from: Sweden, Norway, Finland, Canada, U.S.A.
Principal paper exports to: Australia, South Africa, New Zealand, Ireland, India, U.S.A.

BY F. H. LLEWELLYN THOMAS
Secretary of British Paper & Board Makers' Assn., and Paper Makers' Straw Trading Co.

—London

In 1956 there was definitely a slackening in demand in certain industries which had its repercussions on the papermaking, boardmaking

and coating industries. This came after a record year for production in 1955.

The net result was, in the final analysis, not important as regards any reduction in production. The total amount of paper (excluding board) produced in 1956 was 2,595,863 short tons, compared with 2,625,544 short tons in 1955 and 2,443,756 in 1954, showing a decrease of 29,681 tons from 1955. Production of paperboard was 1,006,785 short tons compared with 999,016 short tons in 1955 and 943,514 in 1954, an increase of 7,769 tons over 1955. The total paper and board figures in 1956 were 3,602,647 short tons compared with 3,624,539 tons in 1955 and 3,387,270 tons in 1954, a slight decrease of 21,912 tons from 1955.

There was a more serious falling off in the production of coated papers and boards. The 1956 production amounted to 133,991 tons compared with 152,226 tons in 1955, a falling off of 19,135 tons, but a little more than 1954 which was 132,846 tons.

Consumption of newsprint was 1,039,390 tons in 1956, an increase of about 67,000 tons over 1955. Consumption of other paper and board was down slightly at 3,534,850 tons in 1956, compared with 3,769,490 tons in 1955.

Exports of raw materials including rags and waste paper increased from 101,148 tons in 1955 to 126,948 tons in 1956.

Boards and wrappings generally have done reasonably well, but some higher class printings and writings are still suffering from increased foreign competition, decline in ordering, etc.

Competition from Scandinavia and other sources has been keener. Capacity in Scandinavia increased by 350,000 tons in 1956. Importers had no difficulty in getting prompt delivery. Capacity has increased in the United Kingdom and indeed to some extent in nearly every papermaking country.

COSTS UP DUE TO SUEZ . . . Costs of production have risen, caused by such factors as the Suez crisis, which had important bearing on transport costs, fuel oil and ocean freight rates which rose because of a world shortage of shipping.

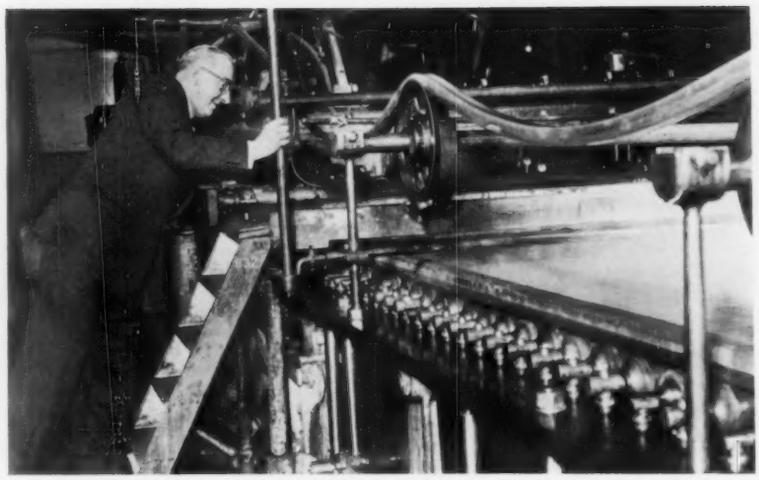
The unfortunate and prolonged strike in the printing industry which began in February and lasted till April 1956 had serious effects on demand for papers which are still being felt.

Control, which lasted in some form or another from Sept. 3, 1939, disappeared because of the restoration of competitive conditions, the availability of supplies and all kinds of paper and board. Restrictions on importations of paper and board were removed as from July 22, 1956 (apart from newsprint). Control by statutory regulation of newsprint however ended Dec. 9, 1956 and was replaced by a system of voluntary control providing for an experimental period of freedom from page rationing.

In April 1956 the only other remaining restriction, namely on all betting schemes, including football pools, was removed.

Some extensions of capacity came into operation during 1956. New machines and modernization have resulted in the annual capacity in the United Kingdom being estimated as in excess of output by 300,000 tons. Within a short period, probably another 150,000 tons will be added to annual capacity. Important additions are in newsprint, in the case of one machine an increase of 60,000 tons. Machines were being made to run at increasing speeds.

The Organization for European Economic Cooperation says that for 1955 the apparent consumption of paper and board exceeded by 84,700 short tons the total production in Europe of 14,205,400 short tons. The



Quality Papers on British Machine

This 76 in. Fourdrinier at John Collins Ltd.'s Stoneywood Paper Mill, at Denny, Sterlingshire, makes strong envelope, label, oiling, buff and colored index manila papers (M.G. and Rolled). RUSSELL M. COOPER, v.p. and gen. mgr., Powell River Co. (Canada) is inspecting the machine.

UNITED KINGDOM—IMPORTS OF RAW MATERIALS

	Roundwood (cu. fathoms)	*Woodpulp Paper Grades (short tons)*	*Woodpulp Dissolving (short tons)*	*Esparto, Grasses (short tons)*	*Rags (short tons)*
1938	102,305	1,812,116	88,903	348,556	16,781
1954	86,201	1,883,702	264,505	347,669	23,965
1955	85,046	2,225,420	285,902	339,826	33,199
1956	82,256	2,227,238	237,485	253,507	23,587

UNITED KINGDOM—PAPER and BOARD IMPORTS

(in short tons)

	Newsprint	*Packing & Wrapping*	*Fibre Building Board*	*Other Uncoated Board*	*Coated Paper*	*Coated Board*	*Other Paper & Board & Mfrs.*
Av. 1936-7-8	495,644	303,292	32,672	403,184	7,771	26,790	53,300
1946	116,584	81,547	40,824	105,029	564	3,222	17,300
1953	262,050	154,625	73,613	239,872	615	2,180	20,345
1954	366 242	238,156	139,966	368,778	730	3,784	33,079
1955	451,143	302,294	188,422	433,377	727	3,898	37,001
1956	537,138	252,814	161,326	333,857	1,031	2,799	36,020

UNITED KINGDOM—PAPER and BOARD EXPORTS

(in short tons)

	Newsprint	*Other Uncoated Printing*	*Writing Paper in large sheets*	*Uncoated Board*	*Coated Paper*	*Coated Board*	*Other Paper & Board & Mfrs.*
Av. 1936-7-8	70,985	57,675	13,796	15,103	9,397	2,277	55,414
1946	17,292	20,854	12,606	6,572	12,401	1,888	50,584
1953	139,786	20,595	5,873	8,510	17,020	3,022	85,209
1954	143,033	24,836	6,577	9,975	23,580	5,749	97,005
1955	155,229	28,215	6,831	10,081	26,953	4,537	102,752
1956	152,446	47,888	5,776	11,259	21,778	4,331	56,706

UNITED KINGDOM—RAW MATERIALS AND PAPER

Thousands of Short Tons—Source: Board of Trade

	Consumption							Newsprint		Total Paper	
	Pulpwood	Woodpulp	Esparto	Rags	Straw	Waste Paper	Paper Produced	Imports	Exports	Imports	Exports
1938								491	62	1,177	193
1939							2,894				
1946	113	995	100	147	321	680	1,908	114	16	357	126
1949	230	1,272	386	152	93	844	2,475	199	66	509	199
1950	332	1,724	330	146	107	965	2,835	151	111	736	298
1951	n.a.	1,983	389	152	168	998	3,100	171	95	973	265
1952	n.a.	1,608	238	119	136	890	2,750	261	73	635	219
1953	94*	1,670	266	132	134	1,024	2,988	275	139	753	280
1954	89*	1,868	366	155	140	1,170	3,391	366	143	1,151	311
1955	82*	2,071	337	159	145	1,228	3,647	451	155	1,416	334
1956	175	2,064	293	149	111	1,189	3,603	537	152	1,163	299

* In addition to this tonnage of pulpwood, there were 72,320 piled cu. fathoms of "roundwood" in 1953; 86,320 in 1954, and 78,790 in 1955.

UNITED KINGDOM
PAPER and BOARD PRODUCTION
(in thousands of short tons)

	1939	1946	1953	1954	1955	1956
Newsprint	897	330	676	687	694	720
Mechanical papers	256	112	294	346	394	404
Chemical wood papers	233	113	161	212	253	236
Esparto papers & boards	270	240	243	301	317	290
Rag & handmade paper	46	41	37	45	49	44
Kraft	169	151	222	245	275	275
Other wrapping (mainly food)	68	49	67	75	76	76
Other wrapping (other)	169	187	221	242	258	231
Strawpaper	67	47	106	161	179	182
Building boards	75	53	49	55	56	59
Other boards	602	517	815	908	969	979
Wallpaper	49	26	47	54	62	65
Industrial & misc. papers	45	41	50	60	65	66
Total	2,946	1,907	2,988	3,391	3,647	3,627

report, in emphasizing that the recovery of European paper industry had been rapid, estimated that the production capacity for woodpulp in OEEC countries would rise 6%, and for board and paper, 10%, between Jan. 1956 and July 1957. Although restricted by available capacity, newsprint output in Europe rose in 1955 to 2,568,500 short tons, an increase of 7%, whilst imports amounted to 650,100 short tons, a rise of 32%. The most significant increase to be found was in kraft paper and board where consumption rose by 253,000 short tons to 1,674,200 short tons, an increase of 18%. The production of 1,512,500 tons showed an increase of 137,500 tons, the balance made up by importing 290,400 tons.

The levying of a 5% import tax by the Republic of Ireland on all imported newsprint and other printing paper, and a substantial cut in imports introduced by the Australian Commonwealth also had adverse effects here. Despite these and currency, quota and other difficulties in many export markets the amount exported rose to 340,751 short tons at a value of £40,111,413 ($112,312,000), a record tonnage figure. The export trade comprised paper and board 268,297 short tons, value £23,879,901, coated paper and board, 25,643 tons, value £4,984,666, and manufactures of paper and board 46,812 tons, value £11,246,911. The total exported in 1955 of 328,727 short tons was valued at £37,623,684.

ADVANCES IN TECHNOLOGY . . . Every year sees advances in the technology of papermaking. Various exhibitions during the year, particularly the Packaging Exhibition, showed very greatly improved standards. Experiments with new fibers continue to be made, but as yet there has been no serious impact on traditional fibers.

Production of esparto grass papers fell off to 284,468 short tons in 1956, compared with 311,160 in 1955.

Papergrade woodpulp imports totaled 2,227,238 short tons in 1956 a slight increase of about 1800 tons. Papers made from rags amounted to 43,591 short tons compared with 48,007 tons in 1955. Straw consumed for paper and board during 1956 was 109,373 tons. Waste paper, especially lower grades, was in ample supply.

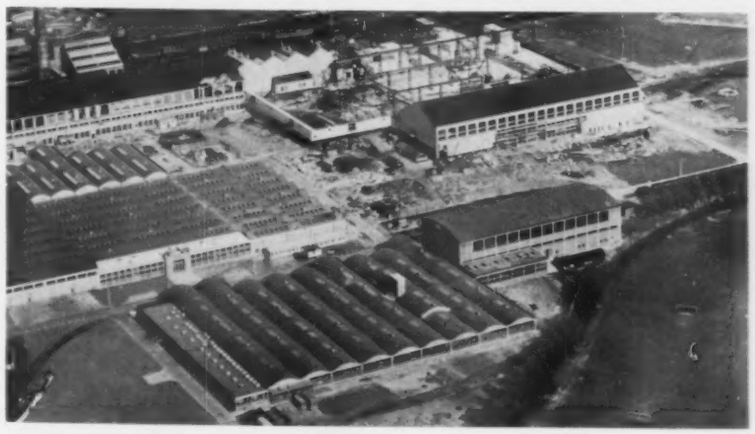
WHAT 1957 LOOKS LIKE . . . Restriction of credit still has an influence and certain important industries are still not so busy as they would like to be, although there are indications that trade should improve during the year.

After three years of distinguished presidency Cyril V. Oliver of Albert E. Reed & Co. Ltd., relinquished office in March 1957. His extremely effective and pleasant leadership was recognized as outstanding by the trade as a whole. He has been succeeded as president of the British Paper and Board Makers Assn. by William R. M. Watson, of Messrs. R. & W. Watson Ltd. Mr. Oliver representing for three years the Southern District of the association and Mr. Watson the Scottish District.

BY E. F. J. DEAN
Editor, The World's Paper Trade Review
—London

The year 1956 saw a continuation of the post-war trend towards larger units.

Among more important mergers during the year was Bowater Corp.'s acquisition of Eburite Corrugated Containers Ltd., and the A. E. Reed take-over of Colthrop Board and Paper Mills, Ltd., and Cropper and Co.,



British Mill Gets a Royal Start

Aerial view shows new cellulose wadding mill and converting plant erected at Aylesford by Kimberly-Clark Ltd. in association with Reed Paper Group. Prince Philip, Duke of Edinburgh, pressed button to start cellulose wadding machine which has potential speed of 3,000 fpm.

Ltd. The Inveresk Group acquired Cresco Ltd., manufacturers of paper towels, while Associated Paper Mills, Ltd., took over Watsons of Bullionfield, Ltd.

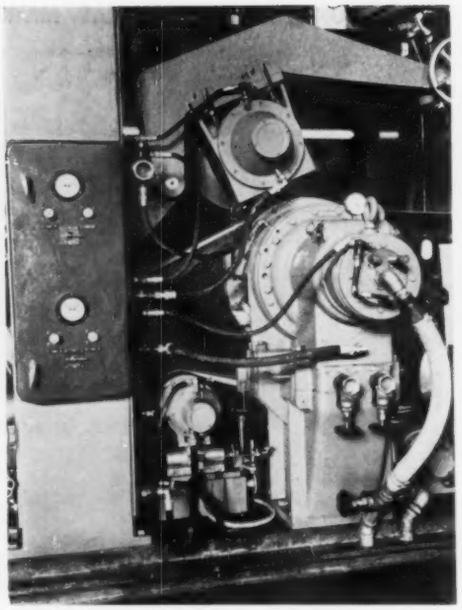
The Bowater Corp. of North America acquired Mersey Paper Co., Ltd., of Liverpool, Nova Scotia, while at home the corporation, with Scott Paper Co. (U.S.A.), formed Bowater-Scott Corp., to manufacture and distribute in Britain products similar to Scott's tissues, napkins, wax papers, paper towels, etc. The new corporation succeeded the Bowater subsidiary, St. Andrew Mills, Ltd., and is building at Northfleet, Kent, a new tissue plant, to be in operation this year.

Albert E. Reed and Co., Ltd., formed a comprehensive group of those of its subsidiaries engaged in manufacture of corrugated cases, corrugated rolls and allied products. Medway Corrugated Paper Co., Ltd., National Corrugated Paper Co., Ltd., and Thompson and Norris Manufacturing Co., Ltd., with its subsidiaries, became Reed Corrugated Cases, Ltd.

In April 1957 a notable example of Anglo-American enterprise to develop use of cellulose wadding products in the British market received royal recognition when Prince Philip, Duke of Edinburgh, started up the high-speed cellulose wadding machine at the new mill and converting plant built by Kimberly-Clark, Ltd., in association with the Reed Paper Group at Aylesford, Kent.

Kimberly-Clark, Ltd., is British subsidiary of the Kimberly-Clark Corp. (U.S.A.), and the Reed Paper Group embodies a range of companies manufacturing paper and paper products of which Albert E. Reed & Co., Ltd., is the parent. The new plant at Aylesford is a £2½ million ($7 million) development and the machine, designed jointly by Kimberly-Clark and Reed Group technicians and built by Bertrams Ltd., Edinburgh, Scotland, is claimed to have a potential speed of 3,000 fpm.

Suction Press on New Machine



Suction press on Kimberly-Clark wadding machine in England shows feed control points with flexible feed and drain lines. Machine is reported faster than any wadding unit in Europe.

1957 CONDITIONS . . . Business conditions generally in 1957 have been quiet. Paper and board production at 989,536 short tons showed an advance of about 21,000 short tons in the first quarter of 1957 over the same period last year, but the increase was mainly in newsprint, mechanical printings and some packaging grades. Higher priced grades again lagged behind, as in 1956.

But overhanging the industry like a dark cloud is the proposal that Britain join a European Free Trade Area, which would be associated with the common market to be set up by France, Germany, Italy, and the Benelux nations (Belgium, Holland and Luxembourg). If the scheme is finalized on present proposed lines, tariffs would be gradually reduced and finally eliminated over 15 years. The British paper industry feels that safeguards should be introduced into the scheme, particularly as Britain is largely dependent for raw material from the Scandinavian countries, whose competition would be fortified by the Free Trade Area proposals.

■

SWEDEN-Paper Exports

(In thousands of short tons)

	News	*Kraft*	*Sulfite Wrapp'g*	*Greasepr'f Parchm't*	*Board*	*Total (Includes all other grades)*
1937	222	202	128	24	69	694
1946	141	147	82	18	61	493
1949	233	206	90	25	75	683
1950	226	256	105	30	130	816
1951	222	261	110	29	124	811
1952	240	192	61	21	67	624
1953	227	262	76	26	126	784
1954	213	314	88	27	154	868
1955	218	343	92	29	155	916
1956	275	376	89	31	157	1,013

Source: Authoritative—Special to PULP & PAPER

SWEDEN . . . . . .

Production Hit New Highs; Most Goes for Export

Population: **7,290,000.** ***Per capita paper consumption:*** **200 lbs.**
Paper mills: **52.** ***Woodpulp mills:*** **134**

Production (short tons)	***1955***	***1956***
Paper	1,647,000	1,733,000
Chemical woodpulp	3,321,000	3,493,000
Mechanical woodpulp	937,000	1,020,000
Paper exports	916,000	1,013,000
Woodpulp exports	2,537,987	2,807,695

Principal paper grades made: **Newsprint, kraft, paperboard**
Principal paper exports to: **Britain, West Germany, France, Netherlands, Denmark**
Principal woodpulp exports to: **Britain, France, West Germany, U.S.A., Italy, Netherlands, Belgium, Argentina, Spain**

—Stockholm

Sweden's pulp and paper industry continued to expand during 1956. According to figures furnished PULP & PAPER WORLD REVIEW NUMBER by Ewert Landberg of Swedish Paper Mills Assn. (Svenska Pappersbruksforeningen), paper and paperboard production totaled 1,733,000 tons in 1956, compared to 1,647,000 tons in 1955. Paper and paperboard exports were 1,013,000 tons, an increase of 97,000 tons over 1955. Thus most of Sweden's increased produc-

tion was shipped to other countries, much of it to European markets, which took about 649,000 tons of paper and paperboard in 1956, compared to 610,500 tons in 1955. Shipments to the U.S. came to nearly 33,000 tons. Exports to South Africa and Australia were hampered by import restrictions.

Newsprint accounted for most of the increase in both production and exports. Output rose about 60,000 tons over 1955 to a record 457,000 tons. Almost two-thirds of total newsprint produced was exported. Kraft paper also showed an increase to 488,000 tons, 19,000 tons over 1955. Fine papers increased slightly, while other grades remained practically the same.

Production of pulp set new records, reports Wilhelm Klinzberg, of Svenska Cellulosaforeningen.

A total of 4,523,000 tons was produced in 1956, consisting of 3,493,000 tons of chemical and 1,020,000 tons of mechanical pulp. Respective figures for 1955 are 4,258,000 tons. 3,321,000 tons and 937,000 tons. Chemical pulp exports came to 2,331,772 tons (of which nearly 400,000 tons were dissolving grades) and mechanical pulp exports were 475,923 tons, for total pulp exports of 2,807,695 tons. As in paper production and exports, most of the increased production was shipped out, while internal consumption remained about the same.

New Swedish Logging Unit

This rubber-tired 4-wheel-drive Unimog Universal tractor is shown pulling full trailer; it also leads and hauls logs, moves dirt, maintains roads and serves as compressed-air source.

Wallboard production in 1956 showed a rise of 5.4%, to 491,700 tons. Domestic sales were 167,200 tons, 7,700 tons more than in 1955, the first rise in internal sales of wallboard for the last ten years. Sweden is said to have the highest wallboard consumption in the world, 44 lbs. per capita.

Wallboard exports reached a record 330,000 tons, 13% higher than in 1955. In spite of a decline of 12,000 tons in exports to Britain, that country continued to be the leading market. Deliveries to other countries were: The Netherlands, 38,170 tons; U.S.A., 35,200 tons; West Germany, 22,800 tons (compared to 10,560 in 1955); France, 11,550 tons; Denmark, 11,000 tons; and Belgium, 9,130 tons.

NO PULPWOOD SHORTAGE IN VIEW . . . The Southern Swedish Forest Investigating Committee reports, contrary to earlier predictions (PULP & PAPER 1956 WORLD REVIEW NUMBER), that Sweden has a substantial timber surplus which could profitably be used for pulpwood, especially in the Southern part of the country. Intensive reforestation begun ten years ago in Norrland (Northern half of Sweden) has eliminated the previous shortage caused by over-cutting.

The report indicates that the pulp industry is planning a large-scale expansion to bring Sweden's total pulp capacity (including chemical and mechanical, but excluding defibrated and exploded pulps) up to 5,845,000 tons by 1960.

MOST PRICES REMAIN STABLE . . . Increased production costs and freight rates have caused Scandinavian paper export prices to rise.

SWEDEN—Pulp Produced

(In thousands of short tons)

	Mech.	*Sulfite Bleached*	*Sulfite Unbl.*	*Sulfate Bleached*	*Sulfate Unbl.*	*Total Chem.*
1937	809	514	1,290	96	1,176	3,076
1946	747	556	802	132	777	2,267
1949	700	671	757	223	828	2,479
1950	794	735	831	272	869	2,712
1951	800	772	858	319	904	2,853
1952	751	698	774	327	793	2,592
1953	612	762*	756	342**	771	2,777
1954	850	860*	850	426**	985	3,121
1955	937	929*	896	450**	1,046	3,321
1956	1,020	975*	925	480**	1,113	3,493

Source: Svenska Cellulosaforeningen, Stockholm.

*including dissolving sulfite pulp (322,000 tons in 1953, 403,700 in 1954, 413,000 in 1955, 411,000 in 1956)

**dissolving grades included.

SWEDEN—Paper and Board Produced

(In thousands of short tons)

	News	*Kraft*	*Fine*	*Board*	*Total (Includes all other grades)*
1937	303	249	79	135	1,004
1946	290	254	110	162	1,074
1949	345	302	110	168	1,186
1950	358	345	112	210	1,301
1951	366	369	133	231	1,401
1952	365	306	122	157	1,202
1953	372	371	123	207	1,352
1954	373	442	137	260	1,536
1955	397	469	155	264	1,643
1956	457	488	167	265	1,733

Source: Authoritative—Special to PULP & PAPER

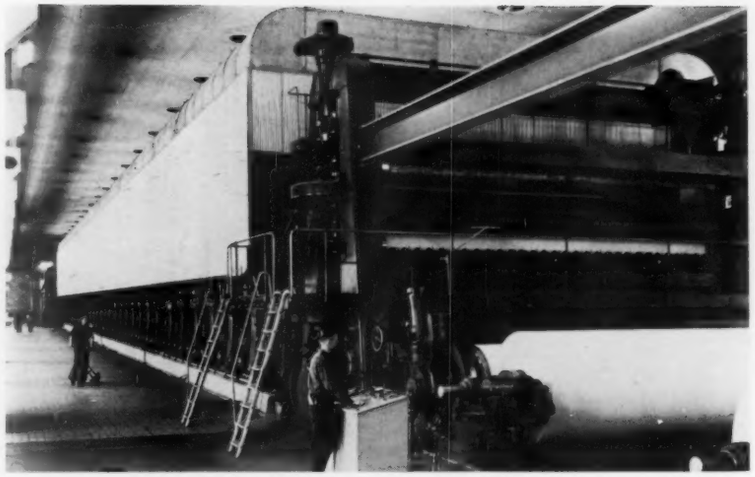
However, prices of dissolving pulp haven't changed since the first quarter of 1955, and there has been a downward trend in prices of unbleached sulfite and unbleached sulfate. Pulpwood prices were lowered slightly to the level they had reached before rises made in the autumn of 1955.

Sverker Kastrup, sales manager of Swedish Cellulose Co., commented that the stability of world market pulp prices during the past three years is the result of increased production and keen competition. He said that this has been possible in a period of rising costs only by shrinking profit margins at the mills.

NEWSPRINT CAPACITY GROWS . . . Much of the increase in newsprint production is due to a new machine at the Stora Kopparberg mill in Kvarnsveden, which went into operation during the summer of 1956. Initially the new machine was expected to add about 55,000 tons to the mill's existing 143,000 tons capacity. Full production capacity for the new machine is 77,000 tons. Most of the machine's equipment was designed and built by a Swedish firm, Karlstads Mekaniska Werkstad. It produces paper 244 in. wide at a speed of almost 2,000 fpm.

Besides the new machine, 17 new grinders and a new barking plant were installed. A new 6,875 cu. ft. compound cooker is expected to increase sulfite pulp production by 11,000 tons per year.

The Swedish Cellulose Co. is reported to be planning installation of a 77,000 ton machine at its Ortviken mill, and Holmen Bruks will build a 55,000 ton machine at its Hallstavik mill. With these additions, Sweden's annual output of newsprint should reach about 660,000 tons by 1957-58.



New Newsprint Machine in Sweden

Stora Kopparberg Corp. started up this newsprint machine (its ninth) at Kvarnsveden mill in June 1956. The machine is 246 in. wide, designed for operation at 2,150 fpm.

OTHER FIRMS EXPAND . . . Papyrus A/B continued to modernize and expand its board mill at Molndal. In 1950 a board machine with trimmed width of 125 in. was installed and, in Oct. 1956, a new board machine with a trimmed width of 142 in. was started up, producing about 66 tons per day. The groundwood mill and finishing department were enlarged. Production at the mill is expected to increase from 30,800 tons to about 40,700 tons a year. The mill also produces about 25,000 tons annually of fine paper.

The 77,000-ton sulfate pulp mill that was to have been built last summer by Forest Owners Cellulose Co. (Skogsagarnas Cellulosa A/B) (PULP & PAPER 1956 WORLD REVIEW NUMBER) was delayed by opposition of local fishermen. It is reported the mill will be built this year, since a method for carrying waste liquids out into the sea has been developed. Startup is scheduled by the end of 1958. Site of the mill is Monsteras, on the Swedish East coast. It will include a 38,000-ton bleaching plant.

Korsnas A/B announced plans to install two new digesters, replacing two smaller ones, at their Karskar sulfite mill, to be completed in 1958. Mo and Domsjo A/B will enlarge their electro-filtration and chemical regeneration plants at Alfredshem. Munksjo A/B plans to rebuild and enlarge the paper machine hall at Jonkoping, and the government-owned Statens Skogsindustrier will build a screening plant and pulp and paper depot at their kraft mill at Karlsborgs Bruk. Wifstavarfs A/B are building a new sawmill at Vivstavarv. Dynas A/B plans to erect a new building housing a paper machine at Vaja.

Swedish Cellulose Co. announced a new sulfite cooking process which will result in a 10% increase in pulp production. The new process, called two-step cooking, was developed at the firm's Kubikenborg laboratory and is reported to have given excellent results in tests on an industrial scale at the company's sulfite mills at Soraker and Kramfors.

SWEDEN'S WOODPULP EXPORTS TO ALL COUNTRIES AS COMPARED WITH EXPORTS TO THE UNITED STATES

(In Short Tons)

Years	*Bleached Sulfite*	*Unbleached Sulfite*	*Bleached Sulfate*	*Unbleached Sulfate*	*Ground-wood*	*Dissolving**
1938 (To All Countries)	304,078	571,077	92,793	575,508	297,420	
1944 (To All Countries)	156,340	710,709	13,088	70,889	10,600	
1945 (To All Countries)	262,146	49,787	43,273	536,114	314,054	
1945 (To U. S.)	56,496	283,959	28,070	274,429	27,933	
1947 (To All Countries)	445,607	530,569	136,701	462,120	223,852	
1947 (To U. S.)	40,076	218,918	56,282	201,440	12,532	
1949 (To All Countries)	578,965	530,448	197,380	496,287	284,350	
1949 (To U. S.)	42,130	129,902	70,013	106,160	7,547	
1950 (To All Countries)	632,082	609,404	250,326	501,324	312,224	
1950 (To U. S.)	49,350	99,562	89,663	103,932	12,763	
1951 (To All Countries)	601,114	526,089	267,647	455,863	326,661	
1951 (To U. S.)	30,522	51,344	71,765	58,562	6,767	
1952 (To All Countries)	490,747	406,386	248,861	352,272	296,231	
1952 (To U. S.)	26,776	61,356	72,714	41,855	12,634	
1953 (To All Countries)	385,133*	584,020	355,787	521,267	341,105	409,782
1953 (To U. S.)	45,262	79,408	106,635	65,091	14,744	3,773
1954 (To All Countries)	273,680	574,310	337,370	465,630	396,000	407,440
1954 (To U. S.)	22,330	44,110	88,330	49,170	13,403	1,320
1955 (To All Countries)	329,699	557,097	346,698	475,246	424,101	405,146
1955 (To U. S.)	18,706	27,772	81,744	54,825	9,313	28
1956 (To All Countries)	403,176	553,990	402,137	556,261	475,923	416,208
1956 (To U.S.)	23,006	36,672	86,555	61,058	6,598	—

** From 1953, dissolving grades are listed separately.*
Source: Svenska Cellulosaforeningen, Stockholm. Especially prepared by PULP & PAPER.

NORWAY . . . . . .

Had Profitable Year in Spite of Strike, Increased Costs

Population: 3,450,000. *Per capita paper consumption:* 159 lbs.
Paper and board mills: 55
Pulp mills: 68

Production (short tons)	*1955*	*1956*
Paper	656,040	650,654
Chemical woodpulp	680,158	649,000
Mechanical woodpulp	713,251	726,000
Paper imports	11,220	10,000
Paper exports	374,935	398,896
Chemical woodpulp exports	323,295	296,000
Mechanical woodpulp exports	443,218	474,000

Principal grades: Newsprint, kraft, sulfite, book and writing, paperboard

—Oslo

A three-week strike in July 1956 held Norway's pulp and paper production to totals lower than in 1955. Paper production was down about 5,000 tons to 650,654 tons in 1956. Chemical woodpulp decreased from 680,158 tons in 1955 to 649,000 tons last year. The only category that showed an increase was mechanical pulp, which reached 725,000 tons in 1956, compared with 713,251 tons in 1955.

Nevertheless, 1956 was a prosperous year for the industry, with most companies showing good profits. Exports of paper and board reached a record 398,000 tons, up about 24,000 tons over 1955, and combined chemical and mechanical woodpulp exports were 770,000 tons in 1956, compared with 766,500 tons in 1955. Increased mechanical woodpulp exports accounted for this rise, as chemical woodpulp exports were about 27,000 tons lower in 1956 than in 1955.

Prices for domestic consumption were lower than for export, and meant a loss of about 20 million kroner ($2.8 million) compared to the price that could have been obtained on the export market. Thus profits came from export sales, whose total value increased over 1955, mainly because of higher prices for mechanical pulp and newsprint, both of which had a considerable increase in volume of exports.

The wage settlement following the strike represented an expenditure of about 15 million kroner ($2.1 million) for the industry. Other costs, including freight, timber, coal and fuel oil, continued to rise. Production costs are estimated to have risen by about 200 kroner ($28) per ton for chemical wood pulp. Arrangements for timber prices for the 1956-57 season are better than in recent years, however, and in some cases costs have even been lowered.

Norway has Rivers, Wood, Power

Drivers try to extricate logs from jam in Glomma River, Norway.

ATOMIC POWER . . . Some mills were slowed down by a shortage of water and power, especially in the first half of 1956. In certain districts electricity was rationed until late spring. The firms of Saugbruksforeningen, Borregaard, Union, Hunsfos and Follum are participating in the project for a Norwegian atomic energy company, Noratom, in the hope that steam from atomic energy production can eventually supply cheap power (PULP & PAPER 1956 WORLD REVIEW NUMBER, Norway section).

In spite of constant concern about competition, particularly from large producers in the U.S. and Canada, and limitations of timber resources, a considerable production increase in woodpulp is planned for 1957. Whether or not the plans can be carried out depends a great deal on water and power supply. The situation is reported to have become worse recently in eastern Norway.

EXISTING MILLS EXPAND . . . A new greaseproof machine was started up in 1956 at Greaker Cellulosefabrikk A.S., Oslo, doubling production of this quality. In 1957 the company plans to make glassine. Herre Fabrikker A.S., near Porsgrunn, manufacturers of kraft paper and boards, started a new kraft paper machine and installed two generator units with a capacity of about 800 kw each. Hurum Fabrikker, Hurum, which previously had manufactured only pulp, started production on a trial basis of kraft liner board. Ranheim Papirfabrik A.S. at Ranheim, near Trondheim, plans to increase production of kraft paper. It has ordered a kraft paper machine about 2,000 ft. long from a Norwegian company, for delivery in two years.

PROJECTS FOR NEW MILLS . . . For the last five years Norway and Finland have been discussing a plan to build a mill using timber from substantial forests in Enare, across the

NORWAY—Paper Produced

(in thousands of short tons)

	Paper	*Board*	*Total*
1937	457	44	501
1950	485	45	530
1951	514	49	564
1952	466	49	515
1953	—	—	555
1954	581	44	625
1955	582	74	656
1956	581	69	650

NORWAY—Paper Exports

(in thousands of short tons)

	Wrapping	*News*	*Other*	*Board*	*Total*
1937	100	195	62	25	382
1949	63	165	80	17	325
1950	82	164	85	30	361
1951	82	152	101	31	366
1952	65	131	64	27	287
1953	63	145	104	26	338
1954	46	149	152	44	391
1955	56	143	132	44	375
1956	48	169	141	40	398

NORWAY—Pulp Produced

(in thousands of short tons)

	Mech.	*Sulfite*	*Sulfate*	*Total Chem.*
1937	599	527	82	609
1946	308	207	46	253
1950	590	449	84	533
1951	613	491	93	584
1952	569	454	92	546
1953	637	481	92	573
1954	708	554	95	649
1955	713	571	106	680
1956	726	559	90	649

NORWAY—Pulp Exports

(in thousands of short tons)

	Mech.	*Sulfite Bleached*	*Sulfite Unbl.*	*Sulfate*	*Total Chem.*
1937	322	298	56	16	370
1946	91	86	2.2	5.5	94
1949	289	202	0	9	211
1950	344	236	6	16	258
1951	369	238	0	15	253
1952	352	220	0	16	236
1953	339	184	6.8	18	477
1954	423	178	13	21	316
1955	443	160	10.5	21	324
1956	474	275	11	10	296

EUROPE

border in Finland, and providing work in Finnmark, in northern Norway. Agreement to build such a mill at Sydvaranger, near the Finnish border, was reached at a recent meeting in Oslo of officials of Finnish and Norwegian Foreign Ministries. The plant would produce 30-40,000 tons per year of sulfate pulp. The project was originally suggested by Norway, but the current arrangement is reported to have a number of drawbacks from the Norwegian point of view. Norway would have to build and maintain a highway, at high cost.

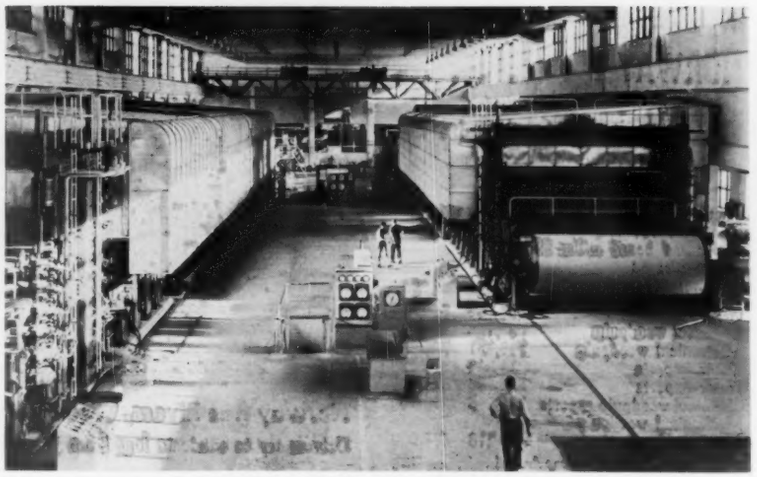
A loan was floated in Norway to finance a mechanical pulp and paper mill in north Norway, near Mosjoen. The plant will have initial capacity of 16,500 tons a year, and will use about 1,412,000 cu. ft. of timber annually. Construction is not expected to start for about two years. Cost is estimated at about $2.8 million.

A county-owned mechanical pulp mill at Follafoss in Nord Trondelag is planning to build a large paper and board plant. The plan includes a $14 million paper mill and a $2.8 million pasteboard mill. The company has the benefit of exemption from state taxes.

TIMBER RESOURCES ARE SCARCE . . . Potential capacity of the pulp and paper industry depends to a large extent on development of timber resources. Among plans for expansion, some are for plants which would use timber grades previously considered unsuitable.

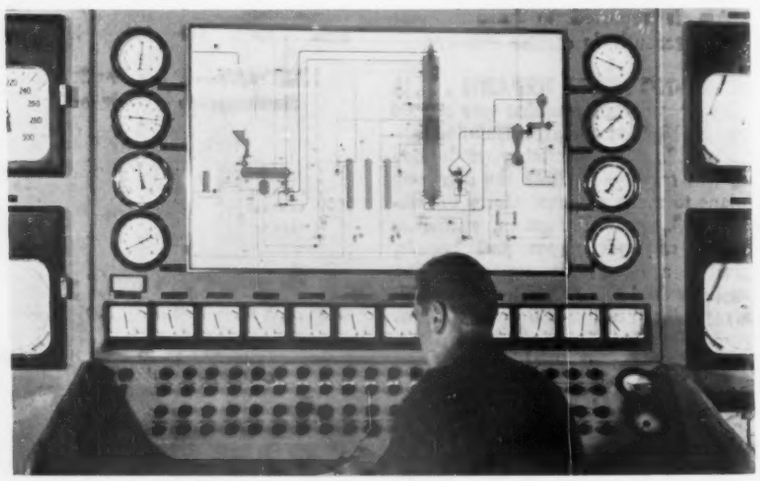
Saugbruksforeningen, in Halden, has carried on experiments in the production of sulfite pulp from small dimensioned pine. The engineering firm of Alsen & Gudnerson has started a pilot plant near Trondheim, using a method they developed for making coarse kraft paper from sawdust.

Meanwhile industry is continuing a reforestation program begun at the end of World War II. The plan is to set out 100 million plants a year by 1960, which, when mature, would yield an increase of 176 million cu. ft. to the annual cutting. Plantings in 1956 totaled about 21,000 acres, and it is hoped 23,000 acres will be planted in 1957, about 20% more than scheduled.



View in Finland's Biggest Kraft Paper Mill

This is Kotka mill of Enzo-Gutzeit Oy, which produces some 130,000 short tons annually. A series of Beloit machines have been built in U.S.A. for the Enzo-Gutzeit mill.



Central Control for Continuous Cooking

This panel and control desk serves a new kraft pulp mill of Joutseno Pulp Oy. in Finland, with two 100-ton digesters.

■

FINLAND . . . . . .

Expansion Slows Down But Two New Machines Start

Population: 4,300,000; *Per capita paper consumption:* 131 lbs.
Paper, board and fiberboard mills: 48
Woodpulp mills: Sulfite 20; Mechanical 26; Sulfate 9

Production (short tons)	*1955*	*1956*
Paper (inc. board)	1,434,000	1,684,000
Chemical woodpulp	2,012,000	2,049,000
Mechanical woodpulp	859,000	932,000
Wallboard pulp	154,000	150,000
Paper exports (inc. board)	1,113,000	1,212,000
Woodpulp exports	1,445,000	1,451,000

Principal paper grades made: All kinds
Principal paper exports to: U.S.A., U.K., German Fed. Rep., U.S.S.R., Denmark, France, Brazil, Belgium
Principal woodpulp exports to: U.K., France, U.S.A., German Fed. Rep., Poland, Brazil, U.S.S.R., Italy, Argentina

By JOUKO KOLJONEN

Information Chief, Central Assn. of Finnish Woodworking Industries

—Helsinki

The building of new capacity and large scale modernizations which have been characteristic features of the Finnish pulp and paper industry during this decade are now slackening. In 1956 the main interest seemed to be concentrated in improvements of the present capacity instead of enlarging it. Thus there were only two new machines, one for newsprint and another for kraft liner, started last year.

The reason for this unfavorable development has been the shortage of

JUOKO KOLJONEN predicts continued increase in Finland's production, in special report to WORLD REVIEW NUMBER.

capital.

Due to modernizations and thus increased speeds of newsprint machines new grinders have been added to many groundwood mills.

In the chemical pulp industry the most important feature has been the installations of sulfite waste liquor evaporating machinery. In a country like Finland where fuel is expensive the effective use of sulfite waste liquor is essential. On the market there are several evaporating systems; those used in Finland are the Swedish Ramén and Rosenbald systems and the German Lurgi system.

New digesters have been added to the mills, of course, and many of those have been of clad steel.

Much attention has been paid to the reduction of foreign matters in the pulp, and thus there has been a lively interest in various types of centricleaners and hydrocyclones.

In the paper and board industry only two new machines have been completed and only three new are under construction.

Paper machine No. 2 of the new Kaipola Newsprint Mill started operating on May 26. The machine was manufactured by the English firm, Walmsleys (Bury) Ltd. The annual output of the machine will be approximately 50,000 tons of mainly S/C newsprint.

At the Kaukopää Mill of Enso-Gutzeit Oy, kraft liner machine No. 2, delivered by Beloit Iron Works, Beloit, Wis., U.S.A., was put into operation in May. The capacity of this machine will be about 100,000 tons a year. In the same mill the No. 1 kraft liner machine was remodeled. With alterations completed, the capacity of the machine will be some 140,000 tons a year.

New machines under construction are the kraft paper machines of W. Rosenlew & Co. Ab, where a German Voith machine is to be set up and Lohja-Kotka Oy, where a Finnish machine with a Yankee cylinder from Voith is under construction. In the board mill of Oy Kyro Ab a new 30,000 tons a year board machine will be put in operation next autumn.

From other sources it is reported that the predicted decrease in pulp production in 1956 (PULP & PAPER 1956 Review Number) didn't materialize. On the contrary, pulp production was up 106,000 tons in 1956, thus meeting the goal set by a 10-year expansion program announced in 1955, to increase pulp production 100,000 tons a year for a total increase of 1,000,000 tons by 1965.

Total paper and paperboard production was up 250,000 tons in 1956.

OTHER DEVELOPMENTS IN FINLAND . . . The "Amperla Project," a plan to build a pulp and paper mill at Tornio, Lapland, has remained in the discussion stage since it was proposed early in 1956. Rainer von Fieandt, governor of the Bank of Finland, expressed doubts about the proposal because two plants already in Lapland, Veitsiluoto Oy and Kemi-yhtio, operate at a deficit. He recommends expanding these plants rather than building new ones. His plan includes increase of production at Kemi-yhtio's cellulose factories, totalling 70,000 tons in the first phase, and building a 96,000 ton pulp mill to supply the state-owned Veitsiluoto Oy's present small machine and a planned new large machine which will produce 80,000 tons of newsprint. Financing of both schemes would be difficult.

Kymmene Sulfite Pulp Mill (Kymmene Ab) was rebuilt and a new bleach plant started up in Jan. 1956. It is a five-stage continuous fully au-

FINLAND—Pulp Produced

(in thousands of short tons)

	Mechanical	*Sulfite*	*Sulfate*	*Total Chemical*
1937	904	1,143	483	1,626
1949	659	690	429	1,119
1950	793	791	525	1,316
1951	889	905	623	1,528
1952	797	786	488	1,274
1953	877	718	530	1,248
1954	934	955	778	1,733
1955	1,013	1,096	907	2,012
1956	1,082	1,096	953	2,049

FINLAND—Pulp Exports

(in thousands of short tons)

	Mechanical	*Sulfite*	*Sulfate*	*Total Chemical*
1937	321	908	392	1,300
1949	176	495	343	838
1950	195	566	403	969
1951	231	655	427	1,082
1952	158	525	271	796
1953	225	511	356	867
1954	213	640	413	1,053
1955	201	750	491	1,242
1956	204	748	499	1,247

FINLAND—Paper Produced

(in thousands of short tons)

	News	*Wrapping*	*Writing and Printing*	*Total Paper (Includes other grades)*	*Paperboard Cardboard Wallboard*
1937	463	121	56	669	172
1949	425	107	62	623	173
1950	460	123	86	700	237
1951	458	141	122	756	355
1952	480	136	108	755	255
1953	484	178	123	824	332
1954	493	257	143	934	421
1955	602	299	136	968	466
1956	661	321	207	1,216	468

FINLAND—Paper Exports

(in thousands of short tons)

	News	*Wrapping*	*Writing and Printing*	*Total Paper (Includes other grades)*	*Paperboard Cardboard Wallboard*
1937	422	101	45	572	133
1949	384	67	43	502	101
1950	417	75	59	557	153
1951	422	87	90	609	238
1952	433	85	78	604	143
1953	443	122	94	671	206
1954	432	183	103	734	267
1955	518	213	137	881	298
1956	592	212	163	980	286

tomatic plant with a daily capacity of 200 tons.

Oy Kyro Ab has enlarged its machine rooms, installed a compressor station, new boiler house and a new pulp stock chest in preparation for a new machine at Kyroskoski to turn out about 31,000 tons of folding boxboard annually.

■

AUSTRIA . . . . . .

Production Rises, New Chemi-Groundwood Process Starts

***Population:* 7,100,000; *Per capita paper consumption:* 75 lbs.**
***Paper mills:* 83. *Pulp mills:* 72.**

Production (short tons)	*1955*	*1956*
Paper	529,710	556,498
Chemical woodpulp	444,399	445,107
Mechanical woodpulp	163,279	186,131
Paper imports	5,500	5,000
Paper exports	284,328	305,055
Woodpulp imports	16,260	17,800
Woodpulp exports	172,572	185,773

***Principal pulp exports to:* Italy, West Germany, Switzerland, France, Hungary.**
***Principal paper exports to:* West Germany, U.S., France, Argentina.**

—Vienna

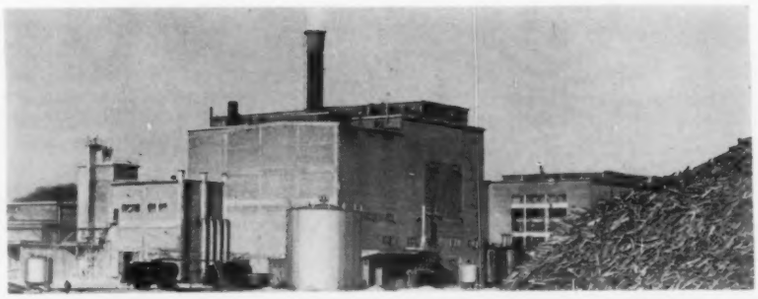
The Austrian Business Assn., in an exclusive report to PULP & PAPER, says that in 1956 Austria's paper production increased by an average of 6% in all grades, the largest increase (29%) being in newsprint. Production of chemical pulp changed very little but groundwood production was up 14%. Paperboard production decreased about 600 tons below the 1955 figure. Semi-chemical pulp was produced for the first time in Austria.

Production of chemi-groundwood by the new ALB-Semicell process, due to begin in 1956 but delayed by changes in plant layout, started this spring. Invented by experts at Ybbstaler Pappenfabriken, the process uses spruce to produce pulp similar in color to unbleached sulfite, but without any bleaching (PULP & PAPER May 1957, page 15).

Domestic sales of paper increased by 6% to reach 189,200 tons. Of this total, 75% was used by the city of Vienna alone. The sales increase was evenly distributed over all paper grades. While domestic consumption of chemical pulp remained almost unchanged at 279,400, consumption of groundwood increased considerably. The paperboard market was about the same as in 1955.

NEWSPRINT EXPORTS RISE . . . Paper exports in 1956 came to 275,000 tons, an increase of 7% over 1955. Newsprint exports in particular showed a sharp rise of 38% over the previous year. Paper and paperboard exports together were almost 55% of total output, setting an all-time record high. Chemical pulp exports were up 8% and paperboard exports rose 6%. Total production of the industry in 1956 was worth 4.76 billion shillings (about $183,070,000).

The leading countries importing Austrian pulp in 1956 were Italy, West Germany, Switzerland, France and Hungary. Considerable shipments were also made to Greece, Spain, Yugoslavia and East Germany. Exports to Argentina fell from 4,268 tons in 1955 to only 197 tons in 1956. Poland, which imported 2,288 tons in 1955, imported none at all from Austria in 1956, but under the Austro-



New Austrian Sulfate Pulp Mill

This sulfate pulp mill was started up recently by Nettingsdorfer Papierfabrik A.G. in Nettingsdorf. The plant has three machines and produces newsprint as well as sulfate pulp.

AUSTRIA—PAPER AND BOARD PRODUCTION
(in short tons)

Year	*Newsprint*	*Book Paper*	*Wrapping Paper*	*Fine & Special*	*Paperboard*
1937	69,718	117,326	57,475	10,791	70,510
1950	78,316	101,661	66,162	16,602	64,939
1951	83,964	110,081	73,096	20,341	74,568
1952	82,037	109,628	62,946	22,266	70,084
1953	92,249	133,901	71,866	28,323	68,804
1954	116,166	151,754	100,905	32,883	85,196
1955	136,833	159,988	102,179	37,085	93,624
1956	176,515	158,000	102,000	27,000	93,038

AUSTRIA—PULP PRODUCTION
(in short tons)

Year	*Sulfite*	*Dissolving*	*Sulfate*	*Mechanical*
1937	255,453	13,893	24,948	106,436
1950	209,129	42,096	23,816	102,672
1951	215,557	58,711	25,694	116,276
1952	209,509	48,947	25,066	108,043
1953	237,213	49,828	37,340	126,378
1954	267,366	59,534	81,829	152,243
1955	283,473	65,870	95,055	163,279
1956	282,000	66,000	97,000	186,131

AUSTRIA—PAPER AND BOARD EXPORT
(in short tons)

Year	*Newsprint*	*Book Paper*	*Wrapping Paper*	*Fine Paper*	*Paperboard*
1937	61,972	31,867	29,148	5,955	35,970
1950	48,522	51,715	15,301	8,599	13,889
1951	51,533	54,704	18,484	9,530	18,777
1952	54,124	50,093	11,023	13,624	13,845
1953	60,981	81,690	20,304	19,546	22,752
1954	83,088	90,581	36,594	20,931	29,373
1955	101,879	97,761	32,916	23,671	28,523
1956	140,593	88,000	30,000	16,000	30,185

AUSTRIA—PULP EXPORT
(in short tons)

Year	*Sulfite*	*Dissolving*	*Sulfate*	*Mechanical*
1937	136,423	12,737	10,340	20,669
1950	87,052	11,905	8,963	6,391
1951	70,253	18,016	9,457	6,106
1952	71,329	11,450	7,920	5,255
1953	84,161	19,451	13,278	9,483
1954	87,657	24,490	34,259	4,937
1955	92,667	25,119	46,576	8,210
1956	98,000	33,000	46,600	8,192

Polish Trade Agreement for 1956-57 will import 2,200 tons by the end of July 1957.

West Germany took 25% of Austria's total paper exports in 1956. Indonesia, Italy, Australia, China and India, formerly leading importers of Austrian paper, took less in 1956, while the U.S., France and Argentina became top paper customers, because of increased newsprint purchases. Newsprint was the second most important Austrian export item to the U.S. in 1956, rhinestones being the first.

EXPANSIONS ARE ALMOST COMPLETED . . . Since the end of WW II, the Austrian industry has been undergoing an extensive modernization and expansion program, much of it financed by U.S. aid. Most of the program had been finished by 1956 but smaller improvements continue. Debarking drums were installed in several mills and other auxiliary equipment was purchased. A new paper machine went into operation at one mill and construction of the chemi-groundwood mill mentioned above was completed.

CONCERN OVER FREE TRADE PLAN . . . The Austrian Pulp, Paper and Cardboard Assn., in an article published by **Oesterreichische Papierzeitung** (Austrian Paper Journal), discussed Austrian participation in a Common European Market or Free Trade Area. It said Austria must cooperate in creating a larger market because exports are essential to the Austrian pulp and paper industry which exports more than half its output, and almost one-third to member countries of the European Coal and Steel Community.

Since Austria's domestic paper prices are lower than those of most West European countries, they will rise in an integrated market area, but production costs and wages will also increase. The industry does not fear sharper competition resulting from a common market as long as individual national industries are offered the same terms. Harmonizing existing credit, monetary policies and social legislation is as essential as changing customs regulations and tariffs.

The Austrian industry fears that, in a common market, Austrian pulpwood supplies to other west European countries would increase at the expense of its own industry. So the industry demands a special agreement to restrict Austrian pulpwood exports before entering a common market.

■

One of Austria's Largest Mills

This mill of Steyrermuehl Papierfabriks und Verlags A.G. has five machines, makes newsprint and several other paper grades as well as sulfite and mechanical woodpulp.

Austrian Mill Uses Sawmill Waste

Zellstoff und Papierfabrik Frantschach A.G. mill in Austria's Lavant Valley supplements pulpwood with sawmill waste. Overcutting of tumber during WW II caused serious shortage. Frantschach mill is one of many in Austria which received U.S. funds for rebuilding after war.

FRANCE . . . . . .

Industry Expands But Chronic Trade Deficit Is Problem

Population: 43,200,000. *Per capita paper consumption:* 107 lbs.
Paper mills: 288. *Woodpulp mills:* 46
Straw or vegetable fiber mills: 18

Production (short tons)	*1955*	*1956*
Paper	1,972,850	2,140,900
Chemical woodpulp	363,830	415,400
Mechanical woodpulp	379,630	396,500
Straw & esparto pulp	66,150	74,900
Paper imports	161,940	263,700
Paper exports	126,790	91,100
Woodpulp imports	554,670	604,300
Woodpulp exports	15,100	13,500
Principal paper grades made:		
Newsprint	459,440	464,000
Kraft	461,960	514,900
Straw	133,170	152,300
Book and Writing	428,140	471,200
Paperboard	384,000	418,300
Cigaret and Tissue	110,580	120,200

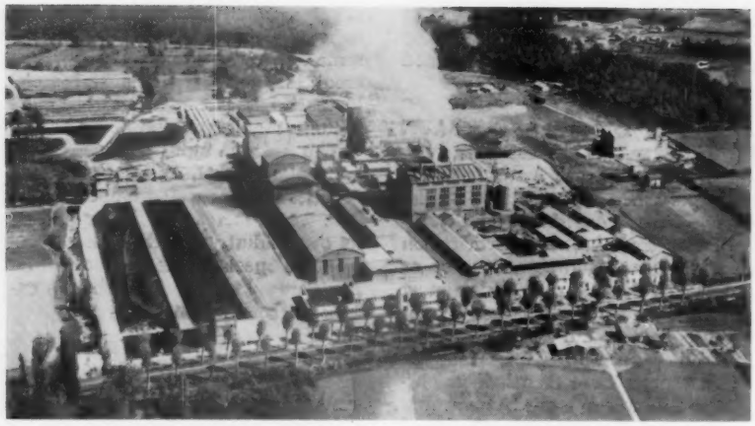
Principal paper imports from: Sweden, Finland, Norway, Austria, U.S.A.
Principal woodpulp imports from: Sweden, Finland, Norway
Principal paper exports to: Algeria, West Germany, Tunisia, Morocco, South America
Principal pulp exports to: United Kingdom, Belgium, Switzerland, Italy

—Paris

French production continues to rise, and at the same time, barely keeps up with increased demand. Increased purchasing power has brought more customers into stores to buy more goods wrapped in paper. There has been considerable development in packaging. Cardboard is increasingly replacing wood or metal.

Nevertheless, France's annual paper consumption is low, 107 lbs. per capita, compared to 440 lbs. in the U.S., 187 lbs. in England, and 208 lbs. in Sweden. It is predicted that consumption will reach 132 lbs. by 1960. This would raise total demand to 2.5 million tons.

EXPECT BIG NEWSPRINT DEMAND . . . Restrictions on newsprint deliveries to newspapers were introduced in June, 1956. Nevertheless it is expected that French consumption



French Mill Expands Capacity

Tartas mill of La Societe Landaise des Celluloses installed new production unit consisting of barking drum, stainless steel-plated digesters with Rosenblad heating device, Biffar screeners, Kamyr continuous bleaching system, wet machine and black liquor recovery system with Rosenblad concentrators and Babcock & Wilcox boilers. The mill produces bleached sufite pulp. Mr. RIBEREAU-GAYON, president of the company, supplied this photo to PULP & PAPER.

will increase for several years to come. Estimates of future demand published by the French paper **Express Documents** are:

1957	570,000 tons
1958	560,000
1959	595,000
1960	690,000
1961	734,000

NEW PULP PROCESS . . . A pilot plant to make paper pulp from monoecious hemp is to be built at Vivoin-Beaumont in Normandy. The mill will use a process patented by the Paper School at Grenoble University. It is planned to produce 6,600 tons a year by 1958.

La Cellulose d'Aquitaine will construct a plant to produce pulp from deciduous timber. Located at Saint-Gaudens in southwest France, the plant is due to begin operating early in 1959, producing about 35,000 tons a year of bleached cellulose. There is an abundant supply of beech for raw material.

OTHER NEW PROCESSES . . . A continuous esparto pulping and bleaching plant at Cellulose du Rhone has been in operation since January, 1956. The mill, a mile south of Tarascon on the banks of the Rhone, is reported to be unique and the most modern of its kind for esparto (PULP & PAPER 1956 WORLD REVIEW NUMBER).

Esparto grass in the form of roped bales is brought from North Africa, grass from Morocco being preferred. 53,000 tons of grass is used annually, yielding 22,000 tons of bleached pulp. A four-stage bleaching process is used.

A second plant now under construction will pulp pine woods (Pin Maritime) from local forests. It will produce 242 tons per day of bleached kraft woodpulp.

A mill being built in southern France will use the new Mead semi-chemical neutral sulfite recovery process developed in the U.S.A., to be installed by Babcock & Wilcox Co., with some equipment from the U.S. Progress has been delayed by the accidental death a year ago of the man in charge of the project.

PULP & PAPER is indebted for interesting reports and information on France to Andre Lourdelet, president and general manager of S.A. Cartonneries Lourdelet-Maricot; J. E. Usse, of S.A. La Cellulose du Pin; and R. Esselin, editor-in-chief of the excellent French industry magazine, "Papier, Carton et Cellulose." They follow:

By R. ESSELIN

Editor-in-Chief, "Papier, Carton et Cellulose"

—Paris

The pulp and paper industry in France made great strides in 1956, in spite of problems of raw material supplies and high costs. Recent governmental decisions relating to imports may cause some plants to have difficulty in obtaining pulpwood or pulp and waste paper. The necessity of depositing 25% of the value of imports at the time of making application for import licenses will aggravate the financial problems which certain firms now combat.

Equipment and paper machines also require the 25% deposit. In France it is said things straighten themselves out; and it is sincerely to be hoped that French reserves of foreign currency will be sufficient to let the government ease or abolish measures which restrict imports and threaten to slow down the expansion of the French paper industry.

At the moment, the expansion is continuing, however. Canson and Montgolfier at Vidalon-les-Annonay have just begun to run a new German machine and Arjomari at Ste. Marie has started up a new Neyret Beylier machine. Both machines produce fine writing and printing grades.

Two newsprint machines, one at Papeteries Beghin and the other at Papeteries de la Chapelle, will be ready next year. They will raise newsprint capacity by about 190,000 tons a year. Since 1957 imports of newsprint are expected to be about 170,000 tons, the output of these two machines should replace these imports. The question is, will the press agree to depend entirely on French mills for its needs, or will it attempt to maintain regular supplies from abroad? (Ed. note: The newsprint machine being installed at Papeteries de la Chapelle is an American Beloit, 268 in. wide, designed to run at a speed of 2,000 fpm.)

As for pulp capacity, Mr. Ribereau-Gayon reports new developments at the Societe Landaise de Celluloses at Tartas (Landes). This mill, which manufactures bleached sulfite pulp, using maritime pine from the Landes forests, was built at the end of the war and equipped with machines evacuated from the "Calaisienne de Celluloses" in the bombed area of Calais in Northern France. The Tartas mill produced only 15,400 tons in 1953. Production is now 39,600 tons, one-third of which is sold to textile mills and two-thirds to paper mills. Some of this tonnage (about 110 tons a month) is exported to Germany, Switzerland, Italy, the United Kingdom and Spain.

FRANCE: PAPER PRODUCTION

(in thousands of short tons)

	Straw Paper	*Kraft, Other Coarse*	*Writing, Printing*	*Strawboard*	*Other Board*	*Thin Paper Specialties*	*Total*
1953	104	367	720	32	280	74	1,577
1954	125	400	822	9	338	97	1,791
1955	133	461	888	10	373	110	1,975
1956	152	515	935	12	407	120	2,141

FRANCE: 156 Years of Paper

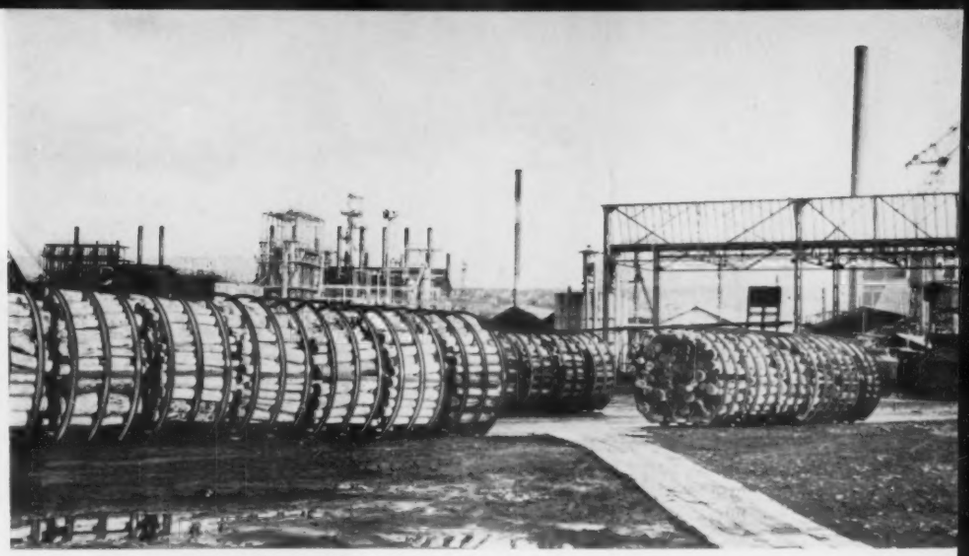
Annual Production of Paper and Board
(in short tons)

Year	Tons Produced	Tons Consumed
1800	22.000	
1850	55.000	
1900	450.000	
1914	900.000	
1938	1.289.000	
1949	1.260.170	
1950	1,450,270	
1951	1.719.950	
1952	1.358.500	
1953	1,576,000	
1954	1.792.000	
1955	1,972,850	
1956	2,140,900	

FRANCE: WOODPULP

(in thousands of short tons)

	Chemical		Mechanical	
1938	148		230	
1949	243	531	291	371
1950	261	606	320	420
1951	305	691	349	497
1952	226	510	308	396
1953	258	590	326	408
1954	311	664	369	471
1955	379	809	378	504
1956	415	815	396	518



Unusual Method of Shipping Wood in France

Societe Nouvelle de Papeterie is one of the largest newsprint manufacturers in France with an annual production of over 100,000 tons. Besides the mill at Grand Couronne, pictured above, the firm has plants at Corbeil-Essonnes and Bellegarde. Photo Cie. Francaise d'Editions, courtesy **France Actuelle.**

BY ANDRÉ LOURDELET

President and Gen. Mgr.
S. A. Cartonneries Lourdelet-Maricot
—Aubiervilliers

The development in Europe of the "common market" will result in a kind of United States of Europe, on an economic level, including at the present time Germany, Belgium, France Italy, Luxembourg and Holland. It is certain that technical progress makes unavoidable the breaking down of barriers between European nations.

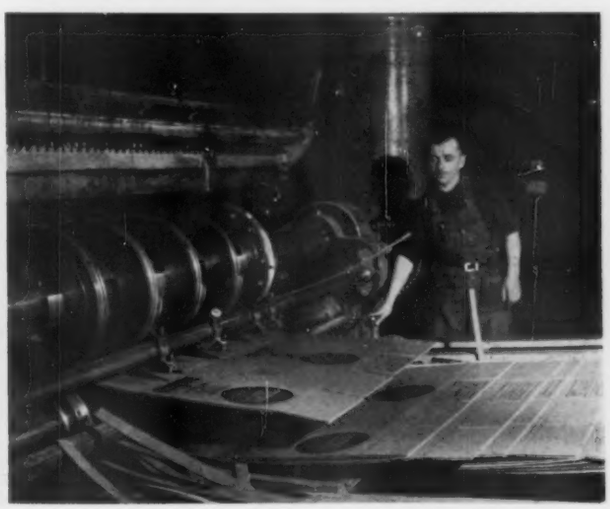
However, some anxiety has arisen in each of the countries involved. If a unified European economy is created, it would seem necessary to achieve, inside the common market, conditions of equality which would enable each nation to cope with the new problems. If it were only a matter of the qualities inherent in each race, they would balance each other. The Germans, for instance, are hardworking, conscientious and disciplined, and the French, on the other hand, show intelligence, skill and a spirit of initiative. This makes a happy combination, but France also has been and still is a pioneer in social reforms. In entering a common European market, France would carry heavier obligations of such social welfare laws as the 40-hour week, extended annual paid holidays, equality of salaries for women, and also extremely heavy fiscal charges, high price of power, etc. The other partners would enjoy better conditions in these areas, whose repercussions on the cost of production is never negligible.

France is always ready to go forward, yet she wishes to avoid being a victim of her generous and idealistic spirit. All this cannot be contested, and surely obstacles will either be removed or by-passed. However, this will take place only after much discussion, perhaps even temporary solutions, and it is well that the United States be aware of these problems in order to understand the slow pace of achievements in this touchy domain.

By J. E. USSE

S. A. La Cellulose du Pin
—Paris

In 1956 the French pulp and paper industry reached a record production of 2,140,900 tons, 8% more than in 1955. The rate of expansion is lower than in 1955, and it is noteworthy that the increase in internal demand caused consumption to exceed production by 8%. This caused serious problems for the French economy.



Making Corrugating and Cartons in France

Societe Centrale des Usines a Papiers et Papeteries J. B. Weibel Reunies ("Cenpa") is one of France's biggest manufacturers of wrapping paper. Left, machining corrugated cardboard; right, cutting cardboard cartons at Begles plant. Cenpa also has mills at Schweighouse, Doullens and Novillars. Photo Feher, courtesy **France Actuelle.**

EUROPE

Total production of pulp made of wood, straw and other fibers reached a new high level of 886,800 tons, an increase of 10% over 1955. This increase was the result of efforts by the pulp industry to make more pulp from French raw materials, using new modern equipment. The full effect of these projects should be evident by the end of 1957. Woodpulp imports increased from 554,670 tons in 1955 to 604,300 tons in 1956, an increase of 9%.

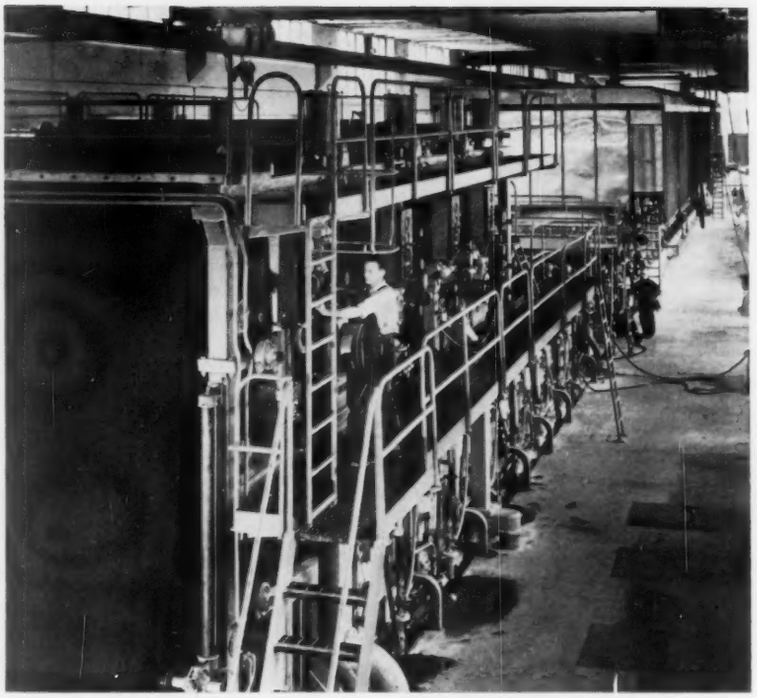
However, the increase in production of woodpulp was unevenly distributed. Mechanical pulp increased by 4.4%; unbleached sulfite pulp decreased by 3%; unbleached kraft pulp increased by 16%; and bleached pulps increased by 31%.

Before the last war, the percentage of bleached pulps was 8.38%, it was 13.25% in 1955 and now it is 14.36%. The percentage of kraft pulp has also increased from 12.56% in 1955 to 12.96% in 1956.

The consumption of unbleached sulfite pulp continues to decrease, going from 13.13% in 1955 to 12.39% in 1956. Similarly, the percentage of mechanical pulp used decreased from 25.57% to 24.21%.

Waste paper consumption continues to increase, from 25.25% to 26.14% in 1956.

Last year we mentioned the anxiety caused by the shortage of pulpwood. Present events indicate more and more difficulties in obtaining raw materials for the paper industry. There is doubt that our country can continue imports costing more than 40 milliards francs annually. A coherent forestry policy will have to be defined shortly, because the growing capacity for pulp production must be used with great prudence and in accord with the production of the French forests.



New Machine Boosts Denmark's Production

Machine at Copenhagen Board Mill, one of six mills belonging to De Forenede Papirfabrikker, went into operation in Jan. 1956, to help meet rising demand for paperboard. This is the second board machine at Copenhagen Board Mill.

French Cellulose Mill

Societe Industrielle de Cellulose d'Alizay's modern plant at Alizay, France, produces annually about 44,000 tons of cellulose for the textile industry. Notice how neatly the wood is stacked. Photo Greff, courtesy **France Actuelle.**

■

DENMARK . . . . . .

Gradual Expansion Continues, New Machine in Production

Population: **4,500,000.** ***Per capita paper consumption:*** **154 lbs.**
Paper mills: **12.** ***Straw pulp mills:*** **1**

Production (short tons)	*1955*	*1956*
Paper	155,000	160,000
Woodpulp	3,500	5,300
Other fiber pulps	8,000	9,500
Paper imports	175,000	171,000
Paper exports	6,000	10,000
Woodpulp imports	98,000	92,500

Principal paper grades made: **Kraft, sulfite, book and writing, paperboard, tissue**
Principal paper imports from: **Sweden, Norway, Finland**
Principal woodpulp imports from: **Sweden, Norway, Finland**

—Copenhagen

A new 122 in. paperboard machine at United Paper Mills' Copenhagen plant (Kobenhavns Papir & Karton-Fabrik) accounts for most of the 5,000 ton increase in combined paper and paperboard production during the past year. It is expected eventually to have an annual capacity of about 25,000 tons of testliner, grayboard, nine-point chipboard and patent coated folding boxboard. Demand for these qualities has nearly doubled

DENMARK—Production
(in short tons)

	Pulp	Paper	Paperboard
1939	570	70,000	11,000
1947	120	78,000	19,000
1950	950	91,296	23,507
1951	908	98,933	15,235
1952	2,120	96,000	18,610
1953	3,850	97,023	25,358
1954	4,070	108,300	29,700
1955 ...	11,470	120,000	35,000
1956 ...	14,800	120,000	40,000

during the past eight years.

This is the second paperboard machine at the Copenhagen mill, and will use domestic waste paper. Denmark's steadily increasing consumption of paperboard is expected to provide an ample supply of waste paper for raw material.

In its second year of operation, Fredericia Cellulosefabrik, on Jutland, increased its production of bleached straw pulp from 8,000 tons in 1955 to 9,500 tons last year. This is the only chemical pulp mill in Denmark and accounts for almost half of the total pulp production. The pulp is used for certain kinds of printing papers.

Fredericia Cellulosefabrik is owned jointly by a cooperative association of Danish farmers and United Paper Mills Ltd. (De Forenede Papirfabrikker). The latter firm, founded in 1889, owns six mills in Denmark and produces about 90% of the country's total paper and paperboard output. It is affiliated with an important converter, Dansk Bolgepap Industri A/S.

E. Persson of United Paper Mills furnished PULP & PAPER information for this report.

Although since 1949 some newsprint has been produced in Denmark, almost all of the country's consumption (about 75,000 tons in 1956) is imported. As is the case for other types of paper and paperboard, there has been a steady increase in newsprint consumption.

Most paper and paperboard exports from Denmark are in the form of packages for foodstuffs, with countries in Africa and the Near East as the principal customers.

■

THE NETHERLANDS . . .

Mills Work at Full Capacity, Make Good Profits in 1956

Population: 10,666,941. *Per capita paper consumption:* 117 lbs.
Paper mills: 20. *Strawboard mills:* 19

Production (short tons)	*1955*	*1956*
Paper (not incl. straw)	493,602	513,508
Chemical woodpulp	46,000	46,000
Mechanical woodpulp	87,000	95,000
Market straw pulp	50,000	50,000
Strawboard	347,940	339,770
Chemical woodpulp imports	179,300	176,000
Mechanical woodpulp imports	71,500	65,000
Newsprint exports	28,600	27,500

Paper exports principally to: Belgium, U.K., Argentina, Brazil
Pulp imports principally from: Sweden, Norway, Finland

By HENK VOORN
Editor, *De Papierwereld*

—Amsterdam

For the "big three" in Dutch papermaking, Van Gelder Zonen, Berghuizer Papierfabriek and Konenlijke Nederlandse Papierfabriek (Royal Dutch Papermills), 1956 was an excellent year. All mills worked at full capacity, and considerable earnings were put aside for new investment.

HENK VOORN, Editor, DE PAPIERWERELD, Dutch paper trade journal, sent WORLD REVIEW NUMBER this exclusive report on the Netherlands.

Van Gelder Zonen, the only mill making newsprint, suffered some losses in selling this product. A new price was put into effect in Nov. 1956, and this is thought sufficient to give some profit. Profits on other products were good, and shareholders got a 12% dividend.

The company works with five mills and with a capital of fl. 47,000,000 (approx. $12,370,400). Annual production is about 264,000 tons.

Berghuizer Papierfabriek also made good profits, sharing a dividend of 11%. This mill has an annual production of about 33,000 tons.

Royal Dutch Papermills increased production by 17% in 1956, earning a 12% dividend. This fine paper mill employs 1,337 men and, among other products, produces machine-coated papers.

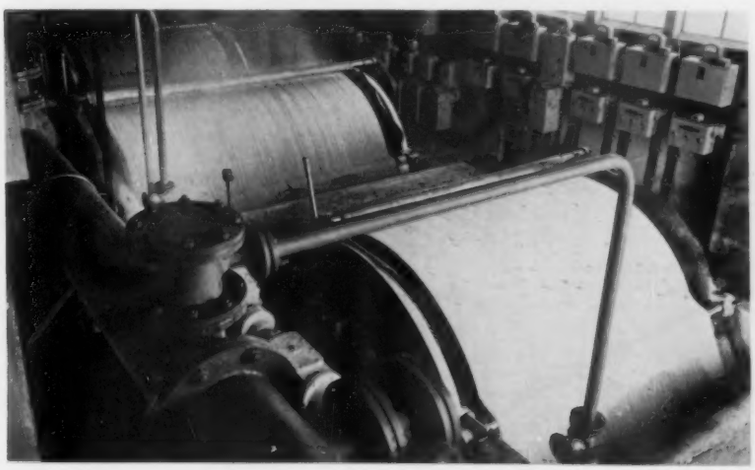
Dutch paper mills, including the smaller ones, are now thoroughly modernized and may be compared favorably with well-managed mills any place, even though several mills' production is not very specialized.

Only minor changes in the mills' plants were reported, and no new machines of any importance were installed during the year. In 1957, however, some new machines will come into operation, including the new fine paper mill now being constructed by Gelderland Papierfabriek.

More and more Dutch mills are going into converting of paper, and one mill installed a very modern brush-coating plant.

Several of the mills have well-equipped research laboratories, but above all the Dutch Fibre Institute (Vezelinstituut T.N.O.) at Delft, a semi-governmental organization, collaborating with the industry, has a prominent part in the field of paper research. The laboratories of this institute are among the best-equipped in the world, and the work done here (published chiefly in the trade journal, **De Papierwereld**) is of importance.

The past is not forgotten by the Dutch papermakers, who once were famous for their handmade products. The Foundation for Historical Research of the Dutch Paper Industry,



Vacuum Filters in Bleaching Department

This installation is at Coop. Stroocartonfabriek "De Eendracht" in Appingedam, one of three Dutch mills producing market straw pulp. "De Eendracht" markets bleached monosulfite straw pulp and is the only mill which uses the sulfite process. The others use the Pomilio-process and bleached kraft process.

EUROPE

sponsored by the Association of Dutch Papermakers, has completed a thorough investigation of the history of papermaking in the province of North Holland. The Foundation is now working on the history of the Southern part of the country.

The future looks bright to the industry in Holland. Paper production in the first quarter of 1957 has reached a total figure of 146,110 short tons. A total production of at least 550,000 short tons in 1957 seems entirely possible.

STRAW PULP, PAPER AND BOARD . . . Production of market straw pulp, paper and board is an important division of the Dutch industry. Britain takes large amounts of these products, importing a total of 121,602 tons of straw paper and board in 1956. This is about 26,000 tons less than 1955 imports.

Three mills in Holland make market straw pulp—"De Eendracht" at Appingedam, "Phoenix" at Veendam and "Sove" at Arnhem. They produce about 50,000 tons a year.

Estimates of straw production are included in our total figures for the Netherlands' pulp and paper production.

The following data on straw paper and board sales were sent to PULP & PAPER by Mr. Voorn:

Holland's Only Newsprint Mill

This mill at Velsen is one of five paper mills owned by Van Gelder Zonen, Holland's largest pulp and paper company. Van Gelder Zonen produces about 50% of the entire output of the Netherlands. The company started in 1784 with one mill, which expanded to become a large wrapping paper mill. The mill at Velsen recently added a new newsprint machine with an annual capacity of 35,000 tons.

THE NETHERLANDS
(Pulp Consumption in Short Tons)

	Ground Wood	Chemical Woodpulp	Waste Paper	Rags
1939	15,131	81,525	71,193	10,055
1946	41,846	72,527	11,556	60,095
1949	80,384	115,208	91,688	17,604
1952	63,000	40,000	—	—
1955	152,900	141,900	157,300	—
1956	158,400	145,000	160,000	—

(Recent figures are U.S.A. sources' estimates.)

NETHERLANDS—Pulp Produced
(In Thousands of Short Tons—U.S.A. Sources)

	Sulfite	Mech.
1949	35	42
1950	40	66
1951	38	64
1952	37	63
1953	33	63
1954	40	71
1955	46	87
1956	46	94

THE NETHERLANDS—Strawboard
(In Short Tons)

	Produced	Consumed	Exported
1951	357,500	112,000	240,000
1952	231,000	87,560	140,000
1954	345,698	126,359	219,339
1955	347,940	126,700	221,240
1956	339,770	140,080	199,690

NETHERLANDS—STRAW PAPER AND BOARD SALES
Short tons sold in 1956

	Straw-board	Straw paper	Total
Domestic sales	122,060	18,020	140,080
To Britain	120,940	680	121,620
To Eire	5,760	—	5,760
To Belgium	13,290	—	13,290
To Others	49,390	9,630	59,020
TOTAL	311,440	28,330	339,770

THE NETHERLANDS—Paper Production (Not Inc. Strawboard)
(In Short Tons)

	News	Book & Writing With Woodpulp	Woodfree	Kraft Paper	Board	Other	Total
1938	97,329	8,655	47,248	84,655	18,103	23,645	279,635
1948	78,746	17,233	36,074	107,396	24,758	23,875	304,571
1949	81,737	17,470	55,207	104,529	20,589	30,630	310,162
1950	87,680	20,240	66,550	116,500	30,250	29,480	350,900
1951	100,980	26,180	79,090	168,310	*	29,590	404,470
1952	106,700	32,670	67,200	128,800	*	27,680	363,880
1953	106,792	42,147	81,431	166,257	*	27,935	424,562
1954	113,437	48,349	84,376	192,135	*	30,282	468,577
1955	117,390	49,818	88,228	205,809	*	32,358	493,602
1956	120,287	49,983	95,637	212,451	*	35,149	513,508

* Included in preceding column.

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ITALY . . . . . .

Per Capita Consumption Rises 12%; New Tissue Mill Starts

Population: 48,200,000; *Per capita paper consumption:* 43 lbs.
Paper mills: 525. *Woodpulp mills:* 44.
Straw or vegetable pulp mills: 17

Production (short tons)	1955	1956
Paper	896,796	1,023,080
Chemical woodpulp	70,180	72,882
Mechanical woodpulp	214,230	245,826
Straw & other pulp	60,060	70,931
Paper imports	58,118	50,014
Paper exports	26,856	27,944
Woodpulp imports	282,249	322,023
Principal paper grades made:		
Newsprint	157,918	183,883
Kraft	86,240	99,660
Book and writing	245,413	271,596
Paperboard	116,279	132,000

Principal paper imports from: Sweden, Finland, Austria

Principal woodpulp imports from: Sweden, Austria, Finland

Principal paper exports to: U.S., France, India, Yugoslavia, Middle East

Principal straw pulp exports to: France, Switzerland, Israel, Spain

—Milan

Italy's paper and board production was 14% higher in 1956 than in 1955, reaching a total of 1,023,080 short tons. During the year per capita consumption reached 43 lbs., an increase of 12%. Chemical and mechanical woodpulp, straw and other fiber pulp production, as well as woodpulp imports, all were higher than the previous year. Paper imports showed a drop of about 8,000 tons.

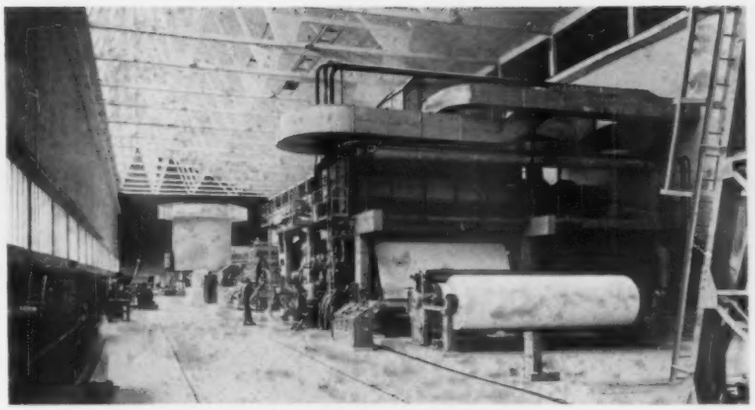
PULP & PAPER's Italian corre-

spondent, Dr. Pietro Ghisoni, technical director of Vita Mayer & Co., Milan, writes that in Dec. 1956 his company completed erection of a new paper mill which produces toilet and facial tissue and cellulose wadding. The 204 in. 2,500 fpm Beloit machine with a 12 ft. Yankee, is designed to produce about 50 tons a day. This is the first machine of this type in all of Southern Europe, which is its intended market. Five Sutherland refiners precede it. It has a Ross Engineering hood and air system.

Vita Mayer is also installing a new plant for the production of semi-chemical pulp by a continuous caustic soda process, to supply pulp for the new tissue mill, with startup planned this summer. The plant will use a new method of impregnation of poplar with cold soda in cylindrical presses (see diagram). The decision to use the new process, with poplar as raw material, was made after careful study of alternative plans.

The firm already has a coniferous kraft pulp mill and a groundwood mill making poplar mechanical pulp.

DR. PIETRO GHISONI, Technical Director, Vita Mayer & Co., Milan, reports on Italian industry to WORLD REVIEW NUMBER.



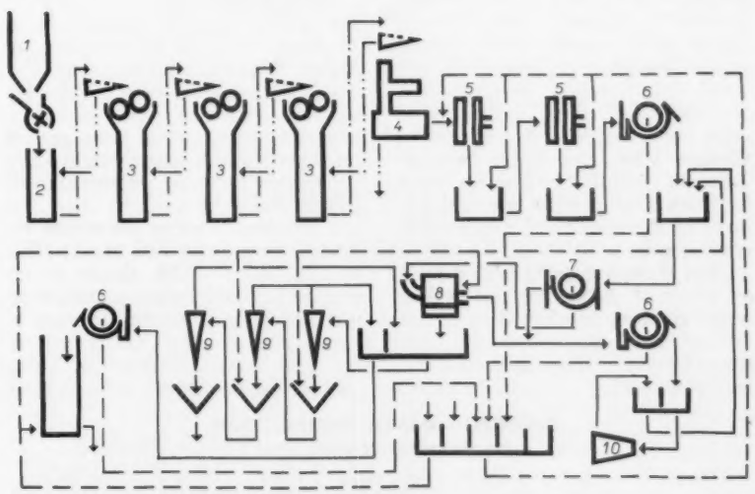
South Europe's First Facial Tissue Machine

This 2,500 fpm Beloit machine was started up recently at Vita Mayer's mill in Milan, Italy. The machine has a 204-in. Fourdrinier, a 12-ft. Yankee dryer, and a Ross Engineering hood and air system. Five new Sutherland refiners are ahead of the machine.

Coniferous wood is scarce in Italy, whereas poplar is abundant and can be grown in about ten years with high yields. Expanding the company's existing installations would have necessitated purchasing 65 to 70 tons per 24 hours of coniferous wood and would have resulted in using high quality raw material for paper which doesn't have to be extremely strong.

INDUSTRY EXANDING IN SOUTH . . . Italy is one of the most densely populated countries in Europe, having over 408 persons to the square mile. The pulp and paper industry is concentrated in the north, the area which last year produced 74% of Italy's total paper production, 66% of chemical woodpulp and 83% of mechanical and semi-chemical woodpulp production.

In 1953 a large-scale plan to industrialize southern Italy, the country's most distressed area where unemployment is a chronic problem, was initiated and the World Bank granted its fourth loan of $74 million in Oct. 1956 to the Cassa del Mezzogiorno (Southern Bank) to finance economic expansion in southern Italy and eastern Sicily.



New Cold Soda Process at Italian Mill

Vita Mayer & C., Milan, developed a new method of impregnation of poplar with cold soda in cylindrical presses, to supply pulp for its new tissue machine which was recently put in operation. Numbers refer to following elements: 1) Chips bin; 2) Triple-impregnation vat; 3) Cylinder presses; 4) Sprout-Waldron Anderson press; 5) Sprout-Waldron refiners; 6) Deckers; 7) Vibrating rotary screen; 8) Rotary screen; 9) Centrifugal cleaners; 10) Refiner.

ITALY—PAPER PRODUCED
(In Short Tons)

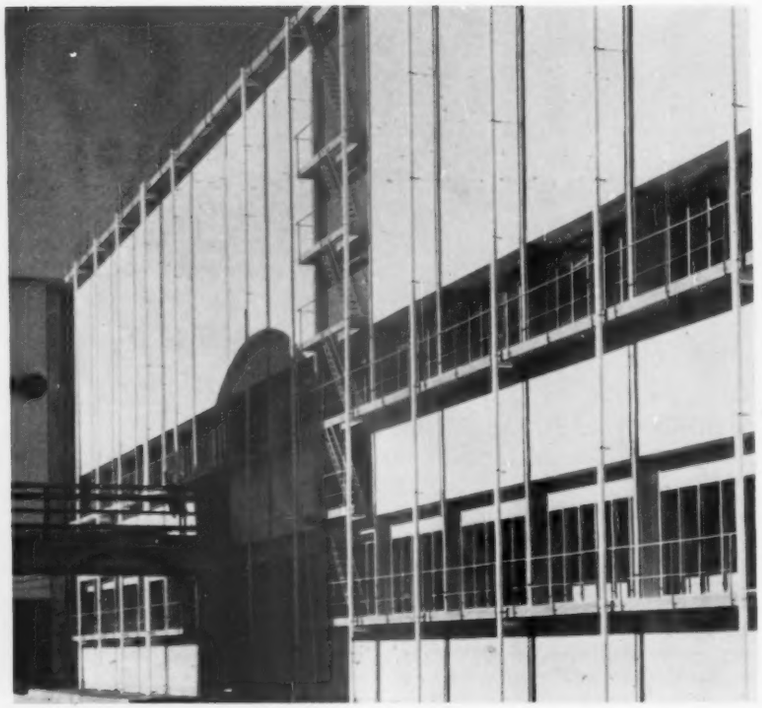
	Newsprint		Kraft Paper		Other Paper & Paperboard	
	Produced	Consumed	Produced	Consumed	Produced	Consumed
1938	82,687	84,362	31,972	32,028	413,437	411,182
1950	94,705	98,233	44,100	45,203	396,900	410,792
1951	115,270	117,758	60,406	63,492	454,870	408,574
1952	123,503	129,897	58,973	63,272	467,329	458,731
1953	127,600	150,920	59,400	67,100	546,700	565,440
1954	140,580	162,800	66,000	80,630	605,604	607,316
1955	157,918	180,030	86,240	92,718	652,637	643,048
1956	183,883	190,277	99,660	20,346	759,538	734,527

ITALY—Paper Imports-Exports
(in short tons)

Year	Import	Export
1948	28,519	17,042
1949	28,480	15,035
1950	31,911	15,316
1951	19,935	57,692
1952	27,403	24,156
1953	58,784	9,243
1954	56,557	17,994
1955	58,118	26,856
1956	50,014	27,944

ITALY—WOODPULP PRODUCTION
(Short Tons)

	Chemical Pulp			Total Woodpulp
	Dissolving	for Paper & Board	Mechanical	
1937	0	31,010	161,766	192,776
1947	17,613	40,958	106,288	164,859
1950	48,141	60,296	140,873	249,310
1951	58,986	93,365	155,278	307,629
1952	57,332	85,979	156,726	300,037
1953	36,200	106,920	162,845	309,585
1954	64,033	112,976	163,004	340,006
1955	70,864	130,240	187,442	388,361
1956	71,708	143,813	245,826	461,303



Modern Mill in Sunny Italy

Vita Mayer & Co.'s mill at Milan in Northern Italy. About 75% of the pulp and paper industry is located in the North.

One of the projects under this plan was establishment of a paper mill near Tarento in southern Italy. The mill was originally equipped to produce special paper from local grain straw, but results proved unsatisfactory. Production was switched to packaging and printing papers, necessary alterations were completed, and the mill recently began operating successfully. More machinery is to be installed and it is hoped that the mill will soon contribute substantial amounts to meet southern Italy's paper requirements.

Experiments are also being carried out with local plants from Sicily, to find a suitable raw material for the production of cellulose. If the experiments succeed, a plant will be erected near a new paper mill in the Syracuse area, which is expected to come into production soon. The paper mill was established by Sicilian fruit growers, mainly to produce wrapping paper for citrus fruit. At present the mill is relying on imported raw materials.

NEW MILL NEAR TRIESTE . . . A 55,000 ton per year paper mill is under construction near the mouth of the Timavo River, near Trieste. The mill will make its own electricity. Construction of the buildings is expected to be completed this year and machinery from Finland should be installed by summer, 1958. Total cost of construction and equipment is estimated at four billion lire ($6,400,000).

PULPWOOD IMPORTS SOAR . . . Italy's imports of pulpwood last year rose by more than 50%, Yugoslavia contributing 43% of the total volume, followed by France, Austria, Finland, Poland and Canada. Italy's largest paper company, Cartiere Burgo, which owns 12 paper mills, produces its own pulp, as do several other mills, including Vita Mayer, Celdit, Cartiere Villa, and A.T.I. (Azienda Tabacchi Italiani). Much of the wood for these mills must be imported, because of the scarcity of native coniferous woods.

Most of the remaining mills depend on imported woodpulp, the leading suppliers being Sweden, Austria and Finland, with smaller amounts from West Germany, Yugoslavia and the United States.

BELGIUM . . . . . .

Newsprint Machine Starts Up; Exports Up, Imports Down

Population: 8,915,000; *Per capita paper consumption:* 110 lbs.
Paper mills: 28 *Woodpulp mills:* 5
Straw or vegetable fiber mills: 1

Production (short tons)	*1955*	*1956*
Paper	351,330	369,437
Chemical woodpulp	45,155	47,127
Mechanical woodpulp	62,263	62,418
Straw & other pulp	7,750	7,590
Paper imports	229,057	229,317
Paper exports	83,072	97,625
Woodpulp imports (mech. and chem.)	191,400	190,300
Woodpulp exports (chem.)	22,000	17,600

Principal paper grades made: Newsprint, kraft, book and writing, paperboard.

Principal paper imports from: Netherlands, Sweden, Finland.

Principal woodpulp imports from: Sweden, Finland, Norway.

Principal paper exports to: Netherlands, West Germany, France.

Principal woodpulp exports to: France, United Kingdom, Netherlands.

BY WILLIAM F. BOKS
Administrator, Gross & Irgens
—Antwerp

For the fourth consecutive year, the Belgian paper industry in 1956 increased its output, with a production of approximately 370,000 short tons, or 105.1% of the 1955 production, which in turn was 5% more than in 1954.

Paper imports dropped to 96.2% of the 1955 figure, while exports jumped by 13.8%. Consumption was only .2% higher than the previous year. For the first time since 1950, production in 1956 increased more than consumption, thus gaining some ground on imports, which were down to 52.2% of Belgium's output, compared with 57% in 1955.

Production of paper per worker increased from about 53⅛ tons in 1955 to 55¾ tons in 1956, thanks to increased productivity and greater commercial efficiency. Several increases in wages, as well as rises in the price of fuel and power, occurred in 1956, but all major Belgian mills showed

BELGIUM—PAPER PRODUCTION
(in thousands of short tons)

	News	*Book and Fine*	*Wrapping and Coarse*	*Total Paper*	*Paper Board*	*Total Paper and Paperboard*
1939	52	85	85	235	26	261
1948	48	98	87	245	26	271
1950	68	105	113	304	23	327
1952	58	75	90	246	36	282
1953	61	79	117	270	37	308
1954	57	84	134	291	45	335
1955	62	88	193	306	46	352
1956	63	96	161	320	49	369

excellent financial results in spite of this.

The main event in 1956 was the starting up, toward the end of the year, of a new newsprint machine (at Papeteries de Belgique S.A.) with a yearly capacity of about 66,000 short tons. This will increase Belgian production of newsprint to about 120,000 tons, or 10,000 tons more than the anticipated consumption. Belgium can consequently be entirely self-sufficient as far as newsprint is concerned, although some imports and exports will probably continue, mainly to and from Holland.

MORE COMMENTS ON BELGIUM . . . . J. Polsky and H. Vincent of Papeteries de Belgique write, "The general situation of our industry in 1956 was quite satisfying, but several factors such as pulpwood, pulp, coal and electricity showed an upward price trend and wages increased, while selling price remained the same.

"Total output reached 369,437 short tons against 351,330 tons in 1955. Production of kraft paper rose by 25% and book and writing paper by 16.5%. Belgian exports grew by 14,600 tons, mainly to the Netherlands, West Germany and France. Imports decreased slightly.

"The Netherlands remains the principal commercial partner of Belgium, and is our most important customer and supplier."

SHORTAGE OF WORKERS . . . According to a report from the Food and Agriculture Organization of the United Nations, the percentage of insured workers unemployed in Belgium fell to 4.2 in Sept. 1956, compared with 5.4 a year earlier. If economic expansion continues at the same rate in 1957 as in 1956, official estimates are that the labor shortage might become serious.

BELGIUM—PAPER CONSUMED
(short tons)

	Newsprint	*Total Paper & Paperboard*
1936.....	89,300	293,000
1949.....	77,100	346,800
1951.....	87,700	407,400
1953.....	90,820	405,994
1954.....	97,764	462,844
1955.....	101,142	482,626
1956.....	101,522	483,592

BELGIUM—PULP
(in thousands of short tons)

	Production		*Consumption*	
	Chem.	*Mech.*	*Chem.*	*Mech.*
1939.....	28	36	155	65
1949.....	20	42	116	75
1952.....	34	55	100	68
1953.....	36	58	123	75
1954.....	45	58	143	71
1955.....	45	62	202	75
1956.....	47	62	206	76

WILLIAM F. BOKS, Administrator - Director of Gross & Irgens, Woodpulp Sales Agents of Brussels, again sends WORLD REVIEW NUMBER a first-hand report on the industry in Belgium.

■

PORTUGAL . . . . . .

Becoming More Important As Exporting Country

Population: 8,621,000. *Per capita paper consumption:* 14.5 lbs.
Paper mills: 18. *Woodpulp mills:* 2

Production (short tons)	*1955*	*1956*
Paper	55,300	81,000
Chemical woodpulp	52,000	65,000
Paper imports	15,500	12,000
Paper exports	9,500	15,000
Woodpulp imports	16,300	30,000
Woodpulp exports	25,200	48,000

Principal paper grades made: Newsprint, kraft, book and writing, paperboard, cigaret
Principal paper imports from: Sweden, Austria
Principal woodpulp imports from: Sweden, Finland
Principal woodpulp exports to: England, France, Belgium
Principal paper exports to: England, Germany, Norway, Greece

—Lisbon

Europe's increased demand for packaging and wrapping paper is reflected in Portugal's growing capacity to help supply it, with the result that Portugal is becoming more important as an exporting country.

A new kraft mill with a capacity of 22,000 tons was installed recently. Two other Portuguese concerns, Cia. do Papel do Prado and Fabrica de Papel da Abelheira, recently started to export kraft pulp and paper.

The four-year-old Cia. Portugesa de Celulose mill, at Cacia, 170 miles from Lisbon, is regularly producing bleached kraft pulp and paper. The mill has Swenson evaporators (U.S.A.) and a bleach plant equipped by Sandy Hill Iron & Brass Works (U.S.A.), using the Kamyr process.

Caima Pulp Co., at Quinto do Caimo, Albergaria-a-Nova, with an annual production of 13,500 tons bleached eucalyptus sulfite pulp, sells its high quality easy bleached pulp to mills all over the world.

■

SWITZERLAND . . . .

Big Increase in Swiss Production and Consumption

SWITZERLAND—Catch . . . . . .

Population: 5,000,000. *Per capita paper consumption:* 163 lbs.
Paper mills: 36; *Woodpulp mills:* 3

Production (short tons)	*1955*	*1956*
Paper	380,000	407,000
Chemical woodpulp	96,000	99,000
Mechanical woodpulp	99,000	110,000
Paper imports	16,519	16,847
Paper exports	9,924	16,762
Woodpulp imports	62,136	58,841
Woodpulp exports	6,027	13,584

Principal paper imports from: Germany, Finland, Sweden
Principal woodpulp imports from: Sweden, Austria, Finland, Canada
Principal paper exports to: France, Italy, Germany
Principal woodpulp exports to: Italy, France

1956 was a good year for Switzerland's pulp and paper industry.

According to a report from Siegfried H. Aeschbacher, manager of the Balsthal Mills, Swiss paper production totaled 302,500 tons, compared with 281,000 tons in 1955, and an average of 210,000 tons each year for the period 1950 to 1955. Paperboard output in 1956 was 104,500 tons. This compares with 99,000 tons in 1955 and an average 75,900 tons annually for 1950 to 1955.

Book and writing papers accounted for 104,000 tons of the total paper production. Newsprint production was 77,000 tons and kraft paper made up the remaining 27,000 tons.

Woodpulp exports more than doubled during 1956 as a new semi-chemical pulp mill, built with Swedish technical advice at Delemont, near Basle, helped boost production.

SWISS PRODUCTION
(In Thousands of Short Tons)

	Sulfite Pulp	*Ground wood*	*News-Print*	*Other Printing Paper*	*Wrapping Paper*	*Other*	*All Paper*	*Paper Board*	*Paper and Board Total*
1935	45	43	34	29	22	27	112	40	152
1945	62	52	40	36	35	34	145	44	189
1950	80	77	52	50	45	40	187	55	242
1951	97	87	55	55	53	57	220	66	286
1952	85	88	55	56	53	61	225	71	296
1953	77	88	60	55	44	60	219	77	296
1954	94	99	66	64	53	70	253	88	341
1955	96	105	72	70	62	77	281	99	380
1956	99	110	77	77	72	77	303	104	407

EUROPE

Woodpulp imports were down about 4,000 tons. Paper and paperboard imports increased by only 330 tons, but exports of this category were up to 16,762 tons from a 1955 total of 9,924 tons. France, Italy and Germany were the principal customers for exports.

Per capita consumption increased from 146 lbs. in 1955 to 163 lbs. in 1956.

Report on a 100-Year-Old Mill

By SIEGFRIED H. AESCHBACHER
Manager of Balsthal Paper Mills

(Ed. Note: This is another in the series by Mr. Aeschbacher on Switzerland's leading paper mills written each year for PULP & PAPER's WORLD REVIEW NUMBER. Last year he told the story of Walty & Co.)

—Balsthal

The predecessor of Victor Laager Carton und Papierfabrik at Bischofszell, on the Thur River, was a Jacquard weaving mill founded in 1856. Since the mill didn't begin to use all the water power furnished by the river, toward the end of 1880 a wood grinding and paperboard mill were added to the woolen mill. The handmade board produced there was used in an embroidery industry which was flourishing at that time in the neighboring city of St. Gall.

In 1897, as the business grew, the company's first paper machine was installed. In the beginning, production consisted entirely of carton for use in the embroidery industry, but soon increasing quantities of wrapping papers were being made.

SIEGFRIED H. AESCHBACHER (left), manager, Balsthal Paper Mills, writes another in his series of reports on famous Swiss paper companies for WORLD REVIEW NUMBER. This year his subject is Laager Carton und Papierfabrik. **VICTOR LAAGER** (right), owner and manager of Laager Carton and Papierfabrik, took over the firm when his father died in 1931.

The weaving mill was closed in 1911 and the joint stock company managing the firm was liquidated. Gustav Laager, whose father held a large share of stock, became sole owner of the mill. When Mr. Laager died in 1931, his son, Victor Laager, took over the enterprise and has owned and managed it ever since.

Installation of a modern paper machine in 1920 changed and enlarged the firm's business. Consequently, paper became the principal product of the mill. Following this development, a second paper machine was put into operation in 1946.

Hand-made cardboard also was made there until the middle of 1953, when it was discontinued. The market for this type of board had diminished and management had to decide whether to continue making hand-made cardboard with more modern methods—a manufacturing procedure already partly old-fashioned—or to turn exclusively to the production of paper. The latter way was chosen and, in 1954, a third paper machine was added, with corollary expansion of installations for preparing stock and converting procedures.

Today this change-over is complete. With a staff of about 200, the mill produces several kinds of wrapping paper and carton. During recent years kraft paper and crepe wrapping paper have become increasingly important specialties.

■

Changed from Hand to 100% Machine Production

Situated on the River Thur at Bischofszell, Laager Carton und Papierfabrik was originally a textile mill, later added wood grinding and papermaking installations. The mill now has three paper machines.

IRELAND . . . . . .

Production Down Slightly; New Groundwood Mill Starts

Population: **2,909,000.** ***Per capita paper and board consumption:*** **81 lbs.**
Paper and board mills, **7.** ***Woodpulp mills,*** **2.** ***Straw or vegetable fiber mills,*** **2.**

Production (in short tons)	*1955*	*1956*
Paper and paperboard	82,720	70,900
Imports paper and board	72,490	69,300
Exports paper and board	37,950	30,000
Woodpulp imports	33,950	31,680

Principal paper grades made: **Wallboard, paper bag, wrapping.**
Principal paper imports from: **Canada, Britain, Finland, Sweden.**
Principal paper exports to: **Britain.**
Principal pulp imports from: **Sweden, Canada.**

—Dublin

There are now 54 plants in the Irish Republic manufacturing paper and paper products, with a total gross value of about $25 million, compared with 16 plants and gross value of products of $386,400 in 1926. Wallpaper heads the list with a gross value of more than $5.6 million; cartons and boxes come next at about $4.2 million, paper bags are over $2.8 million, and writing paper amounts to about $1.4 million.

While only 522 workers were employed in the entire industry in 1926, in 30 years the working force grew to 4,560, more than half of them women. The average wage for men is approximately $25 a week, and for women about half that.

Production continued a steady ex-

IRELAND—PAPER
(In Short Tons)

	Produced	*Exports*	*Imports*
1949	10,029	1,239	52,993
1950	22,046	5,242	66,834
1951	24,000	11,364	60,000
1953	39,980	22,400	60,960
1954	42,620	35,000	65,000
1955	82,720	37,950	72,490
1956	70,900	30,000	69,300

pansion in 1955, but dropped slightly in 1956. Trading conditions, brisk during the early part of the year, slackened when demand, particularly on the export market, fell off because of the "credit squeeze." It was estimated that consumption of paper and paper products decreased by about 5%. During the year costs generally advanced, especially for fuel.

The government faced a crisis in the economy during 1956, with problems of unemployment, which reached 3.9%, and steady emigration to other countries. Ireland is a relatively underdeveloped country, with an economy based chiefly on agriculture.

NEW PULP, PAPER FACILITIES . . . A groundwood mill was started up during the year by Clondalkin Paper Mills, Ltd., Dublin, the largest firm in the Irish industry. A substantial quantity of newsprint and mechanical pulp papers is being produced there, and it is hoped that with minor alterations in equipment and more experience on the part of the operatives, the newsprint market can be expanded further. When reliable data on the availability of suitable species of pulpwood from local forests is provided, the firm hopes to establish further pulping facilities. It is not expected that they will be able to meet Ireland's total requirements of newsprint, however.

A $2.8 million National Board and Paper Mills at Granagh, near Waterford, started operations only a few years ago and now employs about 300 workers. This mill exports more than 13,200 tons of board annually.

Swift Brook Paper Mills Ltd., Saggart, County Dublin, reports that its paper production reached a new high record last year, with an increase of nearly 5% over the previous year's tonnage. Sales of lightweight writing papers were greater than in 1955. While the total quantity of paper sold increased, the average selling price and value of total sales were both below previous years. This, together with higher production costs, resulted in lower net profits. During the year the mill added a finishing house and machine house, and a No. 4 paper machine is being installed, to be ready for startup this summer.

SPAIN—PULP PRODUCTION
(In Short Tons)

	Chemical Pulp	*Ground-wood*	*Straw*	*Total*
1935	—	16,537	6,615	34,17[illegible]
1949	4,504	21,353	12,224	103,[illegible]93
1951	6,123	28,550	20,915	158,731
1952	6,820	37,171	32,630	195,641
1953	5,797	28,732	29,502	149,223
1954	6,520	34,280	27,931	160,495
1955	11,000	34,870	83,820	129,790
1956	16,500	51,590	86,920	155,010

Worker Checks in at Esperanza Mill

Spanish worker is warned by safety posters in background to work carefully. This picture taken by Harry Carruth, of The Mead Corp., Chillicothe, O., on a recent trip to Spain.

■

SPAIN . . . . . .

Pulp Capacity Increased; Interest in U. S. Methods

Population: 29,202,776; *Per capita paper consumption:* 19 lbs.
Paper and board mills: 209; *Woodpulp mills:* 22
Straw or vegetable fiber pulp mills: 35

Production (short tons)	*1955*	*1956*
Paper	256,740	286,880
Chemical pulp	11,000	16,500
Mechanical pulp	34,870	51,590
Straw or other pulp	83,820	86,920
Paper imports	6,136	5,525
Paper exports	359	747
Woodpulp imports	72,600	93,500

Principal paper grades made: Newsprint, kraft, paperboard, cigarette, book and writing, sulfite, tissue
Principal pulp and paper imports from: Norway, Sweden, Finland
Principal paper exports to: Portugal, Philippines, Ecuador

By ANTONIO DE SABATES

General Manager
La Papelera Espanola

—Madrid

During 1956 the Spanish paper industry increased its paper and paperboard production by 30,000 short tons, or 12% more than the total of last year. This indicates a firm market in all grades of paper and board, especially in newsprint, kraft and cardboard.

Several enlargements were made in the course of the year, principally in pulp mills. Spain still lacks sufficient pulp, in spite of the important developments during recent months. The principal Spanish firm, La Papelera Espanola, plans to intensify the manufacture of semi-chemical pulp, in order to meet the demand for fine corrugated board. This concern has also installed two additional Defibrators in its Renteria plant, which will increase the groundwood production to approximately 110 short tons per day. Four Defibrators are also being installed in other plants. With respect to fine board and strawboard manufacture, La Papelera Espanola plans to install a third machine in the Prat de Llobregat plant (Barcelona). Finally, the Aranguren plant, which produces soda pulp, has enlarged its equipment with a black liquor recovery system.

Other Spanish firms continue to modernize every unit of their pulp (groundwood, semi-chemical and chemical) and paper production facilities. We may refer especially to the Gureola S.A. activities, in Hernani (Guipuzcoa), which will obtain important tonnage of toilet tissues.

The Spanish industry, as a whole, follows with increased interest the development of the pulp and paper industry in America. The writer recently enjoyed a visit to the Deferiet, N.Y., Pensacola and Jacksonville, Fla.,

ANTONIO DE SABATES, General Manager of Spain's biggest paper company, again sends special report for WORLD REVIEW NUMBER. He recently visited St. Regis mills in U.S.A.

New Recovery System in Spanish Mill

La Papelera Espanola's soda pulp mill at Aranguren, Viscaya, last year installed a new black liquor recovery system. This is one of nine mills owned by the firm.

plants of the St. Regis Paper Co. The writer and Mr. Ipinazar, technical manager of our Renteria plant, were in the United States to attend the International Congress of Industrial Atomic Energy, held in New York at the beginning of December, 1956.

Also, from Jan. 10 to Feb. 25, 1957, ten technicians from the more important Spanish paper concerns visited America in a journey sponsored by the International Co-operation Administration. These gentlemen are: Mr. Mendia (Echezarreta G. Mendia, S.A.) as team leader; Mr. Armendariz (Papelera del Norte); Mr. Arrazola (Papelera Uranga); Mr. Asenjo (Papelera Espanola); Mr. Moreno (Papelera Peninsular); Mr. Ochoa (Echezarreta, S.A.); Mr. Roger (Roger, S.L.); Mr. Sese (Papelera Biyak-Bat); Mrs. Trabal (J. Trabal); and Mr. Yrazusta (Yrazusta, Vignau & Co.)

NEW MILL IN GALICIA . . . A pulp mill, to be called Celulosa de Galicia, will be built at Pontevedra, under the auspices of the National Institute of Industry. Construction has begun and the mill will cost 600 million pesetas (approx. $15,360,000). It is estimated that when the mill begins production it will save some $4,000,000 a year on pulp imports.

PREDICTION PROVES ACCURATE . . . In PULP & PAPER's 1955 World Review Number, Sr. Jose Luis Asenjo Martinez furnished a table reprinted here of predicted demand for paper and paperboard in the years 1957, 1962 and 1967, based on a 4% and 5% rise in per capita income in Spain. Sr. Martinez informed PULP & PAPER that the estimate differs from the actual 1956 consumption data by only 0.2%, using the hypothesis of 5% increase in individual income.

He predicts that the remaining figures will turn out to be equally accurate, although it is his opinion that by 1967 they will coincide with a 4% increase in income, because of the scarcity of raw materials. This would give a total paper and board consumption of 542,551 tons in 1967, or 35 lbs. per capita.

■

SPAIN—PAPER PRODUCTION

(In Short Tons)

	Fine	*Tissue*	*Newsprint*	*Kraft*	*Paperboard*	*Printing Paper*	*Total (inc. other grades)*
1949	10,397	1,653	19,536	4,762	23,686	96,631	156,665
1950	12,429	2,205	22,020	5,179	29,038	117,317	189,292
1951	13,115	2,415	25,270	6,100	32,500	122,350	201,750
1952	13,410	2,750	25,550	10,536	36,448	123,957	212,648
1953	15,378	1,663	23,166	11,743	55,352	85,065	200,323
1954	15,080	3,540	34,475	19,430	34,742	147,107	254,374
1955	14,520	5,720	36,562	24,220	40,832	102,300	256,740
1956	15,730	3,300	40,150	31,680	44,000	120,000	286,880

PROBABLE DEMAND—PAPER & BOARD

(Based on a 4% and 5% rise in per capita income)

(Based on a 4% and 5% rise in per capita income)

		Newsprint Per cap.		*Papers—Other than Newsprint & Board Per cap.*		*Total Paper & Board Per cap.*	
Year	*%*	*lbs.*	*tons*	*lbs.*	*tons*	*lbs.*	*tons*
1957	4	3	41,472	15	248,187	20	289,660
	5	5	44,381	19	272,334	22	316,716
1962	4	4	56,798	22	339,928	26	385,732
	5	4	65,185	27	409,589	31	474,775
1967	4	5	77,689	30	464,861	35	542,551
	5	6	95,543	39	615,139	45	710,683

PULP—PROBABLE DEMAND

Year	*%*	*Mechanical Pulp*	*Chemical Pulp*	*Total*
1957	4	59,246	151,821	211,067
	5	65,144	166,445	231,616
1962	4	81,148	207,939	289,088
	5	94,785	250,131	344,916
1967	4	110,986	284,367	395,352
	5	140,185	375,352	515,537

Prepared by PULP & PAPER from the economic study, "Future Demand for Paper & Board in Spain from 1952 to 1967."

GREECE . . . . . .

Modern Equipment for Mill From Swiss Bank Loan

Population: **8,500,000.** ***Per capita paper consumption:*** **17 lbs.**
Paper mills: **6.** ***Board mills:*** **10.**
Strawpulp mills: **1.**

Production (short tons)	**1955**	**1956**
Paper	**46,000**	**50,000**
Pulp	**1,210**	**1,300**
Paper imports	**22,000**	**25,000**
Newsprint imports	**14,000**	**18,000**
Strawpulp production	**7,000**	**8,000**
Pulp imports	**36,800**	**40,000**
Exports of paper, paper boxes	**800**	**1,000**

Leading paper imports: **Newsprint, paperboard.**
Principal imports from: **Sweden, Austria, Finland, Germany, U.S., Italy.**
Principal exports to: **Egypt.**

—Athens

One of the three major Greek paper mills has purchased modern equipment with a $2,060,000 loan from the

GREECE

(in thousands of short tons)

	Paper Produced	*Woodpulp Imported*
1937	34	26
1946	13	13
1949	32	25
1950	38	29
1951	43	28
1952	36	16
1953	24	27
1954	30	33
1955	46	37
1956	50	40

Union des Banques Suisse (original secret source could be in another country), to increase its output and add newsprint to its products. Although the newsprint capacity is apparently enough to meet local requirements, during the next few years it is planned to produce and market only about 3,000 tons annually. The newsprint already offered for sale compares favorably with imported stock in quality and price.

All woodpulp for newsprint has to be imported. The forests of Greece have been denuded, but reforestation is going on. Four-fifths of the forests are state-owned.

American aid programs have helped restore Greece's industrial potential. Hydroelectric development is remedying the lack of coal.

A paper mill in Patras started up a new machine early in 1956, with planned capacity of 11,000 tons annually.

■

ICELAND . . . . . .

High Per Capita Use Here

Population: **166,000.** ***Per capita paper consumption:*** **93 lbs.**

(short tons)	1955	1956
Paper and board imports	6,941	7,730

Principal paper imports from: **Finland**

—Reykjavik

This tiny republic near the Arctic Circle is about the size of Virginia in area but has only one-twentieth as many inhabitants. The island has no pulp and paper mills, but paper is one of its principal imports and Finland is the chief supplier. Yngvi Olafsson of the Ministry of Commerce reports that paper and paperboard imports amounted to 7,730 short tons in 1956. This is 800 tons more than in 1955, and provides an annual per capita consumption of 93 lbs.

■

CYPRUS . . . . . .

Tiny Island Imports a Lot of Paper Despite Political Violence

Population: **510,000.** ***Per capita paper consumption:*** **20 lbs.**
Pulp and paper mills: **None**
Principal imports from: **Sweden, Britain, Finland, Austria**

—Nicosia

England's strife-torn Crown Colony, the Mediterranean island of Cyprus, has no pulp and paper industry but imports enough to give her 510,000 residents a per capita consumption of about 20 lbs. In spite of continuing violence between the island's 400,000 Greeks and 100,000 Turks, and between Greeks and British, Cyprus carries on a flourishing export and import trade. Last year total exports were a record $61.6 million, $11.2 million more than in 1955, and imports were a record $109.2 million.

Imports of newsprint have almost doubled since 1954, totaling 728 tons, valued at $128,800 in 1956. Main sources of supply were Sweden ($67,200) and Finland ($58,800).

Imports of other printing paper totaled $249,200, about $11,200 less than in 1955 but $84,000 more than in 1954. Britain was the main supplier, with $67,200 worth, followed by Austria with $58,800. In 1955 the position was reversed with Austria supplying $56,000 worth and Britain $44,800.

Imports of paper bags and cardboard boxes ($389,000) was more than double the figure for 1955, with Britain contributing $112,000 compared with $39,200 the previous year.

■

YUGOSLAVIA . . . . . .

Industry Grows by Leaps and Bounds; Output Way Up in '56

Population: **17,676,000.** ***Per capita paper consumption:*** **15 lbs.**
Paper and paperboard mills: **8;** ***Woodpulp mills:*** **9.**

Production (short tons)	***1955***	***1956***
Paper	79,188	128,468
Chemical pulp	60,443	91,320
Mechanical woodpulp	29,906	42,604
Paper & paperboard imports	28,241	8,205
Paper & paperboard exports	1,563	2,176
Woodpulp imports	1,904	121
Chemical woodpulp exports	14,285	18,558

Principal paper grades made: **Book and writing, newsprint, kraft, cigarette and fine**
Principal paper imported from: **Austria, Finland, France**
Principal woodpulp imports from: **Austria, U.S.**
Principal pulp exports to: **Bulgaria, East Germany, Hungary, Italy**
Principal paper exports: **Chile, U.S.S.R., Bulgaria, Great Britain, Turkey**

By J. LIVKOVIC

—Belgrade

The pulp and paper industry in Yugoslavia took a big jump forward in 1956, with paper production increasing from 79,188 (short) tons in 1955 to 128,468 tons last year—a 60% increase, according to information compiled by the Federal Chamber of Foreign Trade. Pulp production was up almost 50%, from 90,349 tons in 1955 to 133,924 tons in 1956.

Both chemical and mechanical woodpulp production were up, the greater increase being in chemical woodpulp, 91,320 tons in 1956, compared to 60,443 tons in 1955. Mechanical woodpulp production in 1956 was 42,604 tons, about 13,000 tons more than in 1955.

There was a corresponding decrease in paper imports which dropped from 28,241 tons in 1955 to 8,205 tons in 1956. Woodpulp exports were up to 18,558 tons in 1956 from a 1955 total of 14,285.

As a result of improved relations with Moscow, countries in the Communist bloc became leading customers for both pulp and paper exports from Yugoslavia last year. Italy was still the No. 1 customer for pulp, with East Germany, Bulgaria and Hungary following in that order. Chile took the most paper exports, followed by U.S.S.R., Bulgaria, Great Britain and Turkey.

FOUR TIMES AS MUCH NEWSPRINT . . . Yugoslavia's production of newsprint in 1956 was more than four times as great as 1955's output of 5,612 tons. The jump to 21,503 tons in 1956 was undoubtedly a result of a new newsprint mill in the small town of Krsko (population about 5,500) in Slovenia, about 50 miles from the Austrian border.

The kraft pulp and paper mill at Maglaj in Bosnia, Yugoslavia's first kraft mill, went into production in 1955 with an output of 4,858 tons. During 1956 production was increased to 17,421 tons. It is expected to reach 24,000 tons this year and to be increased gradually to about 40,000 tons. Probably about half of this, 20,000 tons, will be for export. The

YUGOSLAVIA—PULP-PAPER

(In Thousands of Short Tons)

	Production			*Exports*
	Chem. Pulp	*Mech. Pulp*	*Paper*	*Sulfite Pulp*
1951	34	23	66	21
1952	37	17	61	5
1953	40	21	72	11
1954	48	22	74	14
1955	58	30	79	14
1956	91	43	128	18

YUGOSLAVIA—GRADES PRODUCTION

(in short tons)

	News print	*Kraft*	*Book and Writing*	*Paper board*	*Fine Paper*
1955	5,612	4,858	31,557	10,956	1,914
1956	21,503	17,421	36,795	22,433	9,375

YUGOSLAVIA: PULPWOOD EXPORTS

	Cords
1952	109,572
1953	76,176
1954	138,276
1955	193,200
1956	243,156

EUROPE

mill obtains raw materials from local forests and pyrites for the extraction of sulfur from Bosnian mines.

A new market sulfite mill at Prijedor, Bosnia-Herzegovina, produced about 37,000 tons in 1955. Increased output at this mill helped boost Yugoslavia's chemical pulp production last year. Another sulfite mill, Fabrika Celluloze y Prijedor, was completed in 1951 and has a capacity of about 22,000 tons a year.

EXPORT FOREST PRODUCTS . . . In forest deficient Europe, Yugoslavia is one of the few countries which export forest products. Some 39% of her 95,558 sq. miles are wooded areas, with broadleaved forests taking a predominant 71%; coniferous the rest.

Annual growth is estimated at around 20 million cu.m., felling is slightly in excess. This is due to the enormous percentage (about 60%) of wood consumed as firewood. Use of the forests for timber began about mid-19th century.

At World War II end, construction of new forest communications was speeded. Large sums were spent for development of forests as a raw material base for the timber industry. About 345 thousand acres of bare land were reforested and about 741 thousand acres of forests reclaimed.

Yugoslavia has over a thousand nurseries comprising 2,471 acres with a seedling yield of 330 million a year. Timber transportation numbers trucks with a total combined capacity of 6.2 thousand tons, 180 locomotives, some 2.2 thousand railway carts and considerable number of tractors, cranes and mountain railways. After World War II, the timber industry (including pulp), 31% of which had been destroyed and 36% badly damaged, was rapidly rehabilitated.

U.S.S.R. PAPER AND BOARD PRODUCTION

Year	*In short tons*
1937	831,000
1940	812,000
1946	556,000
1947	696,000
1948	836,000
1949	995,000
1950	1,194,000
1952	1,540,000
1953	1,710,000
1954	2,050,000
1955	2,200,000
1956	2,360,000

Sources: United Nations; U.S.S.R. Information Bulletin; and others.

RUSSIA . . . . . .

Paper Shortage Still Exists; Will Import Machinery

Population: 200,200,000. *Per capita paper consumption:* 24.4 lbs.

Production (in short tons)	*1955*	*1956*
Paper and board	2,200,000	2,360,000
Chemical woodpulp	1,200,000	1,350,000
Groundwood	1,100,000	1,180,000
Woodpulp exports	200,000	200,000
Paper exports	10,400	12,000
Paper imports	65,000	73,000

Principal pulp imports from: Satellite nations and Scandinavia.
Pulp exports: France, Satellites.

—Moscow

From editorials and articles in **Pravda** and other Russian publications, it appears that the government is dissatisfied with the performance of the industry and is constantly exhorting workers to produce more.

A campaign to increase production of pulp and paper was started recently. **Pravda** gave front-page center space to a pledge made by workers at one of the country's largest paper plants at Solikamsk, to surpass the production plan for 1957 and appealing to other paper workers to do the same. An editorial praises their example but criticizes the paper industry in general which, it says, failed to fulfill the plan in the first six months of 1956, although the shortage was made up in the second half of the year.

Pravda goes on to state that the Soviet Union suffers from a shortage of paper in general and of newsprint in particular, making many newspapers unable to increase circulation. In closing, this official organ of the government calls on all paper workers to emulate their colleagues at Solikamsk.

Such an appeal is the traditional start of Soviet production campaigns, and this one runs true to form. Following publication of the appeal from the workers at Solikamsk, "spontaneous" pledges by primary pulp and paper producers, as well as paper converting workers to increase their output have been springing up like dandelions. A Byelo-Russian enterprise promises to step up production of exercise books, for example, while another plant promises to increase cardboard output.

Auxiliary materials for the pulp and paper industry are also in short supply. **Industrial and Economic Gazette**, published in Moscow, recently said that Soviet research chemists have developed a new compound from cellulose ether which will replace casein satisfactorily.

SOME REPORTS ARE ROSIER . . . The history of Russia's pulp and paper industry was reviewed in a recent article by N. Suchilniknov. The industry of Tsarist Russia was very poorly developed, he says, even though it had existed over 200 years. Paper and board production did not cover even the limited demands of the time, and the industry depended heavily on imports of raw materials and chemicals from Western Europe. High quality rag pulp and paper and rough wrapping paper were the main products. Newsprint, printing and writing paper, in big demand, were manufactured in very small quantities.

After the revolution, however, the industry began to develop at a rapid pace, he says. Old equipment was repaired and modernized, up-to-date machinery installed, and many new mills were built. Paper imports from Western Europe ceased. Different grades of chemical pulp were manufactured. Valuable by-products such as sulfite alcohol, turpentine, tall oil and tars were extracted from waste, and cable, telephone, condenser and photographic papers were produced.

HOW INDUSTRY GREW . . . During WW II a large number of mills were heavily damaged, but by 1950 most had been completely rehabilitated. Many were reconstructed and expanded and technological processes improved. Today, the author continues, more than two and a half times as much paper is being produced as in 1940, and nine times as much as in Tsarist Russia. Fifteen times more cardboard is being made, and 40 times more pulp.

Production of lithographic and art paper, thin dictionary paper and paper for four-color offset printing has been vastly increased, he said. Improved technological processes have been introduced for grinding pulp, "the casting and squeezing of the paper in the screen and pressing parts of the papermaking machines," and the drying and finishing processes. The Central Soviet Research Institute of the Pulp and Paper Industry is conducting work to improve production.

The Soviet Union is becoming a bigger exporter. Paper and chemical pulp are exported to 15 countries, including Pakistan, the author says.

WILL IMPORT PAPER MACHINERY . . . Several cellulose mills and paper and board machinery are included in a $600,000,000 purchasing

program presented by B. A. Malyshev to the Board of Trade a year ago. In all, it is reported that the Russians intend to modernize more than 50 pulp and paper mills.

Finland has agreed to ship the following machinery to Russia during 1957: Machinery for a sulfite pulp mill; machinery for a board mill; and a machine for quality paper (final delivery in 1958).

British manufacturers of paper machines are attempting to capture some of the trade with Russia. Representatives from Millspaugh Ltd. recently took to Moscow quotations for modernization and for complete new plants. The Cellulose Development Corp. sent representatives to Moscow to negotiate for supplying complete cellulose mills.

RUSSIA'S PLACE IN WORLD TRADE . . . Last year Russia imported 63,286 tons of woodpulp from Scandinavia (including 50,000 tons from Finland) and about 5,000 tons from Canada. Quantities imported from satellite countries are not known. Pulpwood imports from Finland amounted to 10,400,000 cu. ft. in 1956, compared with 10,128,000 cu. ft. in 1955; imports from other non-Communist countries were negligible, and figures for Communist countries were not available.

In a trade agreement between Russia and Finland, Finland agreed to export to Russia during 1957 the following: Mechanical pulp, 10,000 tons; dissolving pulp, 40,000 tons; bleached sulfite pulp, 20,000 tons; parchment, 2,000 tons; various paper qualities, 70,000 tons; various board qualities, including plaster board, 55,000 tons; board containers, 18,000,000 units; kraft sacks, 10,000,000 units; and mass consumption goods (such as paper napkins, exercise books, writing pads, etc.) In the same period, Finland will import from Russia 3,177,000 cu. ft. of pulpwood.

SHOULD USE MORE REED, STRAW . . . Even though the Soviet Union has a forest area per inhabitant well over twice the world average, far too much timber is cut, and only 10% is converted into paper and board, according to an article in **Technology for Adolescents,** published by the Young Communists' League. Demand and consumption of paper are rising faster than is compatible with sound reforestation principles, the article states, and urges that reeds and straws be used as substitutes.

Some 15 million acres of land are covered with reed, and the straw reaped every year is partly wasted. It says two tons of reed could make one ton of cardboard.

At present only two plants in the Soviet Union make bleached cellulose from reed, while two others use reed to make cardboard. This is "a mere drop in the sea." An open letter to the Soviet Minister for the Paper and Timber Industry states that his industry is one of the main culprits responsible for the depredations of forests. At the same time the paper shortage continues and many journals cannot meet the demand of their readers. The journal publishing the article says ten times the present circulation (500,000) could be sold if there were enough paper.

Russia has the largest forestry school in the world—the S. M. Kirov Academy of Forest Technology at Leningrad, with an enrollment between four and five thousand students.

■

POLAND . . . . . .

Prewar Production Tripled; Pulp Imports from Finland

Population: 27,500,000. *Per capita paper consumption:* 76 lbs.

Production (short tons)	*1955*	*1956*
Paper and paperboard	720,000	850,000
Woodpulp	260,000	320,500
Imports of pulp	52,000	65,449

Principal exports to: Russia.
Principal imports from: Scandinavia.

PULP & PAPER'S request for information concerning Poland's pulp and paper industry reached Warsaw too late for a report to be prepared and included in this issue of the WORLD REVIEW NUMBER. S. Matacz and L. Wysokinski of Paged, exporters and importers of timber and paper products, wrote, "We are very sorry that no entry on the Polish paper industry can be given because of insufficient time."

During WW II, some 660,000 tons of paper and board capacity was either destroyed or dismantled and taken to Russia. Several mills have since been rebuilt and new mills started up, and now total Polish production is well above prewar. Paper production in 1937 was 214,500 short tons and by 1954 was raised to 687,500 tons, oversubscribing the Six Year Plan goal of 599,000 tons. It was estimated at 850,000 in 1956 by German sources.

Evidence of unrest among workers in Polish mills is given by a recent report that workers ejected the plant director and two other executives from the Solali paper mill in Zywuec, after a workers' meeting to elect a new director. The two officials were the secretary of the Communist party and the head of the employment and wages department. Apparently no disciplinary action was taken, as the Polish government newspaper **Zycie Warsawy** said some were acquitted and proceedings against the remainder were dropped.

Poland has rich timber resources and coal reserves estimated at 150 billion short tons to support her industry. Although mainly an exporter of pulp and paper, last year pulp imports from Finland were: 44,294 tons dissolving sulfite, 1,768 tons bleached sulfite, and 4,150 tons sulfate, for a total of 50,212 tons, compared with 51,422 tons in 1955. Total pulp imports from Scandinavia amounted to 65,449 tons in 1956.

■

EAST GERMANY . . . . .

Five Year Plan Calls For New Machines, Increased Output

Population: 17,600,000. *Per capita paper consumption:* 73 lbs.

Production (short tons)	*1954*	*1955*
Paper and paperboard	631,000	680,000
Chemical woodpulp	370,000	400,000
Groundwood	390,000	400,000

Principal paper exports to: Russia, Bulgaria.

—Berlin

East Germany lost two-thirds of its pre-war production capacity by war damage and removal of papermaking machinery to Russia and Poland after WW II. Nevertheless within the Communist bloc it is second only to Russia in paper and board production capacity.

The current Five-Year Plan provides for plants to produce packing paper, kraft paper, cement bags, corrugated cardboard boxes, parchment, tissue, toilet, lightweight typing, newsprint and straw paper. East German machinery producers are to provide machinery for this program, including a packing paper machine with daily capacity of 66 tons, a kraft paper machine with daily capacity of 88 tons, and a newsprint machine with capacity of 220 tons at a speed of 2,130 fpm.

During 1956 East Germany imported from Finland 1,200 tons of bleached sulfite, 9,342 tons of unbleached sulfite and 2,318 tons of sulfate, for total pulp imports from Finland of 12,860 tons. Pulp imports from Austria were 1,500 tons.

A newsprint machine with an approximate capacity of 40,000 tons was installed recently at Kriebstein.

HUNGARY . . . . . .

New Mill Will Use Rice Straw

Population: 10,000,000. *Per capita paper consumption:* 14 lbs.

Production (short tons)	*1937*	*1954*
Paper and paperboard	66,000	60,000
Groundwood pulp	22,000	14,000
Imports—woodpulp		8,000
Imports—paper	44,342	6,700

—Budapest

Since the end of World War II, the use of straw has increased in Hungary's paper industry. Of the 35,902 sq. mi. total land area in Hungary, forests cover about 4,838 sq. mi., of which only 308 sq. mi. are conifers. Requirements of industrial timber have to be partly imported. Straw has therefore become an important raw material for making paper.

During 1956 work began on a new $33 million mill which will make pulp from rice straw. Situated at Sztalinvaros, the mill will have a 22,000 ton per year capacity, and is due to start up in 1958. It will save Hungary a reported $2,000,000 a year in imports.

Investigations conducted by the Hungarian Paper Research Institute on the processing of straw, particularly rice straw, were described at a recent London conference of European TAPPI members. They showed that both wheat and rice straw pulp are suitable for making good quality paper. It is necessary to have a free stock, relatively little water on the wire, a wire of proper length with ample number of suction boxes, and good transfer from wire to presses—possibly vacuum transfer, the Hungarian delegates said.

Hungary's paper industry is supposed to be producing 110,000 tons annually now.

CZECHOSLOVAKIA . . . .

Building New Sulfate Mill Equipped by Sweden, Finland

Population: 13,000,000. *Per capita paper consumption:* 51 lbs.

Production (short tons)	*1937*	*1954*
Paper and paperboard	349,000	317,000
Chemical woodpulp	380,000	334,000
Groundwood	170,000	112,000

Principal exports to: Soviet Russia, Bulgaria
Principal pulp imports from: Finland

—Praha

Czechoslovakia, rich both in natural resources and industrial development, possesses an extensive pulp and paper industry. Her economy is closely coordinated with that of Russia, and trade with other Communist countries accounts for 70% of imports and 68% of exports.

Even though an important producer and exporter of pulp, Czechoslovakia imported about 10,000 tons from Scandinavian countries during 1956. Her imports from Finland consisted of 7,730 tons dissolving sulfite and 440 tons of sulfate, for a total of 8,170 tons. This compares with pulp imports of 9,368 tons from Finland in 1955.

Besides numerous pulp and paper mills, Czechoslovakia has one particle board mill and two insulation board and hardboard mills. Most paper mills are small specialty mills which make a wide variety of papers.

A new sulfate pulp and paper mill is being built at Steti, on the Labe River, some 35 miles north of Prague. It will be equipped with a paper machine of daily capacity from 25 to 35 tons, supplied by the Swedish firm, Karlstads Kekaniska Werkstad, A.B. Other equipment was supplied by Finland.

Further expansion is reported in eastern Czechoslovakia, where a large mill produces pulp from beechwood.

Czechoslovakia has an estimated 15,380 sq. mi. of forests, about 65% conifers, and rich resources of coal.

BULGARIA . . . . . .

Plan New Mills, Will Expand Existing Ones; Production Up

Population: 7,629,254; *Per capita paper consumption:* 22 lbs.
Pulp and paper mills: 9

Production (short tons)	*1954*	*1955*	*1956*
Paper	38,170	46,679	65,990
Chemical pulp			16,500
Mechanical woodpulp	11,000	11,617	11,417
Paper imports	24,116	17,824	22,922
Paper exports		545	664
Woodpulp imports	12,701	2,207	

Principal paper grades made: Book and writing, kraft, paperboard
Principal paper imports from: U.S.S.R., Czechoslovakia, East Germany
Principal pulp imports from: Finland
Principal paper exports to: Czechoslovakia, Hungary, Poland

The following special report on Bulgaria's pulp and paper industry was sent to PULP & PAPER by the Bulgarian Chamber of Commerce.

—Sofia

In 1939 Bulgaria produced about 20,780 short tons of paper, cardboard and pasteboards. Including imports this represented an annual consumption of 8.8 lbs. per capita.

After the Second World War the number of cellulose and paper mills in this country rose from five to nine. The newly built factories included a modern joint sulfite cellulose and paper plant.

Production in 1956 amounted to approximately 59,830 short tons of paper and 6,160 tons of paperboard; 16,500 tons of unbleached sulfite cellulose and 11,417 tons of woodpulp. Including imports, mostly of newsprint, annual per capita consumption rose to about 22 lbs. Bulgaria produces a wide range of writing papers, newsprint, packing and wrapping papers, pasteboards, cardboards, corrugated papers and unbleached sulfite cellulose.

Future plans include expansion of the new cellulose mill by 16,500 tons and construction of a mill for the production of cellulose from bleached straw, with an adjoining paper factory, which will produce a considerable part of Bulgaria's writing paper and newsprint. Further plans envisage building a mill for the production of cellulose from beechwood, to serve as raw material for the manufacture of artificial fibers. All existing mills are constantly being reconditioned to meet up-to-date requirements.

The new and reconditioned plants will raise annual per capita consumption in Bulgaria to 33 lbs.

RUMANIA . . . . . .

Still Room for Growth in Rumania's Paper Industry

Population: 17,300,000. *Per capita paper consumption:* 37 lbs.

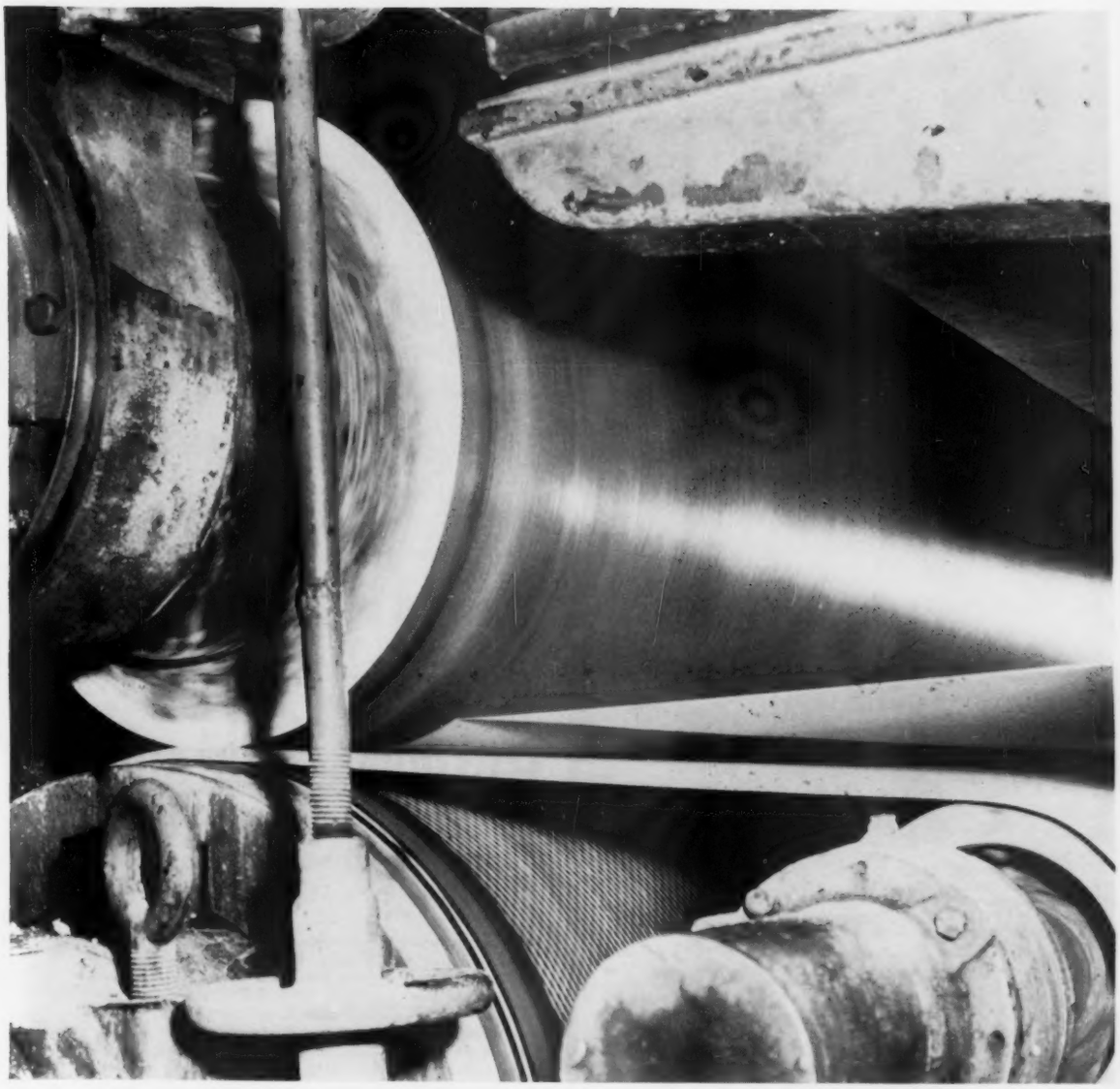
Production (short tons)	*1955*	*1956*
Paper	218,000	230,000
Woodpulp	160,000	184,000
Paper exports	3,000	3,000

—Bucharest

Rumania's paper industry has grown considerably since the country's industries were nationalized in 1948, and its 24,615 sq. mi. of forest, 25% of it consisting of conifers, could provide sufficient raw material for an even larger industry. Per capita paper consumption is 37 lbs.

Last year Rumania imported $750,000 worth of paper and board products from Finland, and $575,000 worth of dissolving pulp.

Production of kraft paper and bags and specialty papers is reported to have increased considerably. A particle board mill is under construction. Production of about 230,000 tons of paper and paperboard last year compares with only 75,000 tons in 1937.



high production speeds depend on clean sheet release . . . like this

Perhaps the one most important quality sought in press rolls is the ability to release the paper web cleanly, and without any trace of picking or sticking. To insure this quality in the rolls which they buy, and to further insure other desirable features such as proper "nip", "cushion" and longer life on the machine, a majority of the country's leading mills and machine builders have learned to consult their Stowe-Woodward Sales Engineer.

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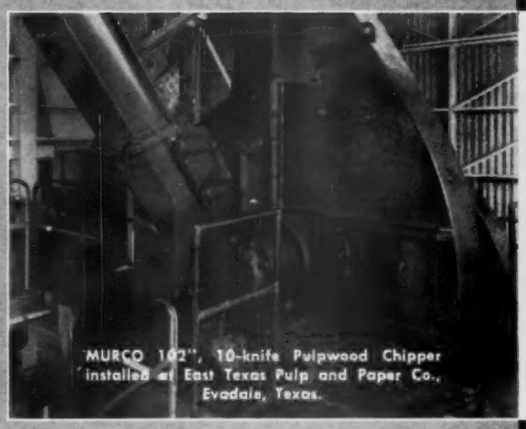
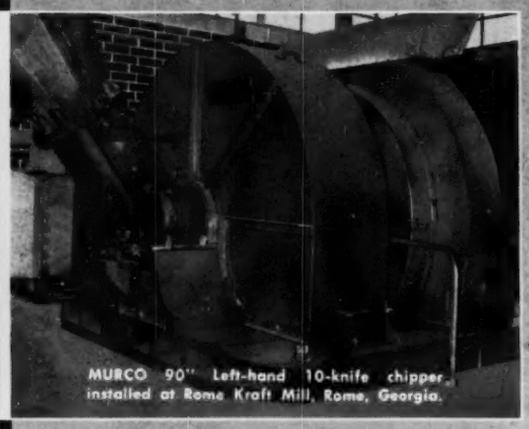


MURCO 102", 10-knife Pulpwood Chipper installed at East Texas Pulp and Paper Co., Evadale, Texas.



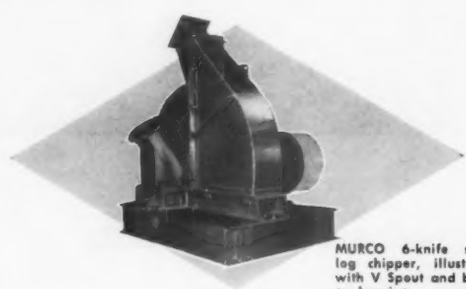
MURCO 90" Left-hand 10-knife chipper installed at Rome Kraft Mill, Rome, Georgia.

MURCO Pulpwood Chippers

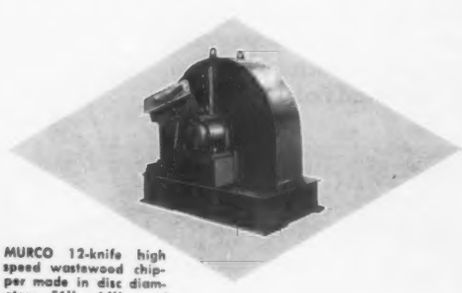
DESIGNED TO PRODUCE MORE AND BETTER CHIPS AT LESS COST

Incorporating the most desirable features for today's production requirements, MURCO Pulpwood Chippers are the result of long and careful study of the various factors that contribute to outstanding chipper performance in producing more and better chips at less cost, less sawdust, fewer slivers, free from repairs, yet at the same time having production records of 100 cords or more per hour. MURCO heavy design construction reduces vibration . . . is compact and requires less floor space. MURCO Round Log Pulpwood Chippers are designed for use where production is high, where maintenance must be held to a minimum and quality chips are a "must". Made in disc diameters from 54" to 153". Other pulpwood chippers are made in sizes 36", 42", 48", 54" and 60" . . . designed along the general lines of the Round Log Chippers are MURCO 12-knife high speed wastewood chippers made in disc diameters 56", 64" and 72", and MURCO mechanical feed 4-knife wastewood chipper with 75" disc diameter . . . all backed by years of constant development so that each year results in an improved chipper design, the latest of which is MURCO UNI-CHIP.

MURCO ROUND LOG Pulpwood Chipper made in disc diameters from 54" to 153".



MURCO 6-knife small log chipper, illustrated with V Spout and blower housing . . . made in disc diameters 36", 42", 48", 54" and 60".



MURCO 12-knife high speed wastewood chipper made in disc diameters 56", 64", and 72".

A complete and detailed story on pulpwood and wastewood chippers is contained in the MURCO Chipper booklet . . . specifications of each model. We will gladly send you a copy upon request . . . Write for it today.

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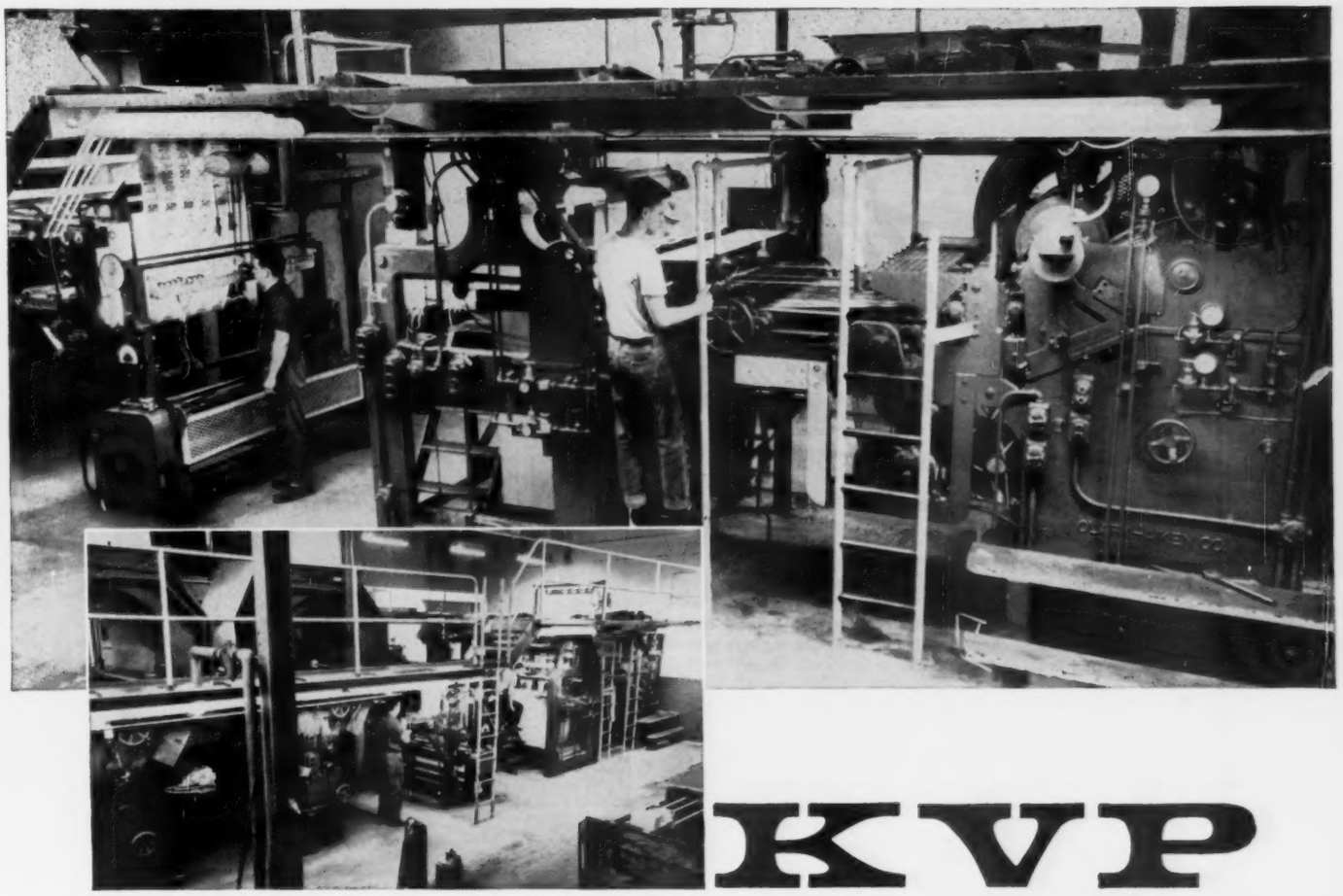

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demonstrates the Speed, Precision and Rigidity of Clark-Aiken Sheeters

In 1950, when The KVP Company, decided it would be possible to eliminate rewinding and greatly simplify handling by hooking a sheeter to the delivery end of its big, high-speed No. 10 four-color rotogravure press, selecting the right sheeter imposed a problem for KVP engineers.

It had to be flexible in its operation to permit synchronization with the press.

It had to be accurate to make each cut of the printed sheet right on the line.

It had to be rigid to withstand the strains of continuous high-speed operation and maintain this accuracy.

Based on their experience with Clark-Aiken Sheeters in the KVP finishing room, they decided that a 52" Type C Clark-Aiken Cutter-Layboy Unit would do the job best.

Wisdom of this decision is borne out in the following report from Dellmore Moffett, Superintendent of Printing of The KVP Company.

> *"The Clark-Aiken sheeter at the end of our No. 10 4-color rotogravure press is valuable to us for three things. First, its rigid construction. Second, its speed. Third, and most important, its accuracy. I am tempted to use the word 'unbelievable' ahead of the word 'accuracy' for it far surpasses our original expectation. We are actually able to control it within the width of a period, or small dot."*

In addition, KVP enjoys the benefits of such exclusive Clark-Aiken design features as

- The "Spiral Shear" Cylinder Knife that makes clean, sharp cuts on any type and weight of stock.
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If you are sheeting paper, pulp, board, film, foil or fabric and require sustained high-speed operation with sustained accuracy and low operating and maintenance costs, Clark-Aiken has a sheeter exactly suited to your needs and can furnish it with a layboy and roll stand exactly suited to your requirements and operating conditions. Clark-Aiken engineers will gladly study your sheeting operations and offer recommendations with actual cost and savings estimates.

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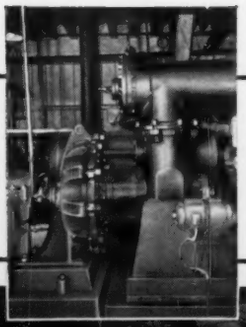
Pulping

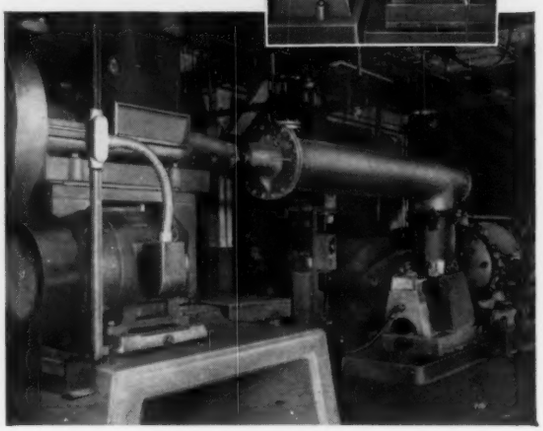


THE ASPLUND DEFIBRATOR

For continuous pulping of wood chips or other cellulose material for hard board, insulating board, roofing and flooring felts, and corrugating board.

In the Defibrator process, the chips are uniformly pressure-cooked as they are conveyed through the digester tube where time, temperature, and pressure are controlled. Chips are then easily defibrated and passed through a blow valve to a cyclone where pulp is pumped to secondary refining or to a stock chest.

Yield is high, and power, operating, and maintenance costs are low. Capacity from 50 to 250 tons per day b.d. New 42" Defibrator now available.

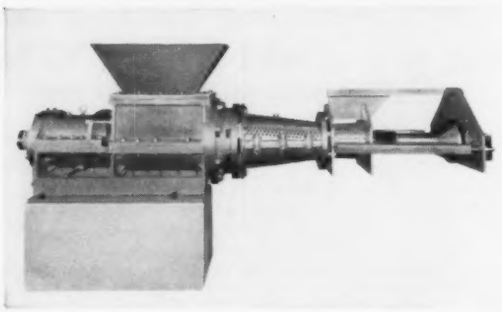


Dewatering

THE DEFIBRATOR BARK PRESS

Developed for continuous dewatering of bark for use as fuel. The Defibrator screw feed principle is used to reduce the moisture content of wet bark to 55% or below. In this state, bark burns readily with about half the fuel value of coal.

In installations now in operation, the processing capacity is approximately 5 tons per hour (on a b.d. basis) and power consumption at this capacity runs between 45 and 50 H.P. Heavy duty construction throughout. Specifications and detailed information on request.



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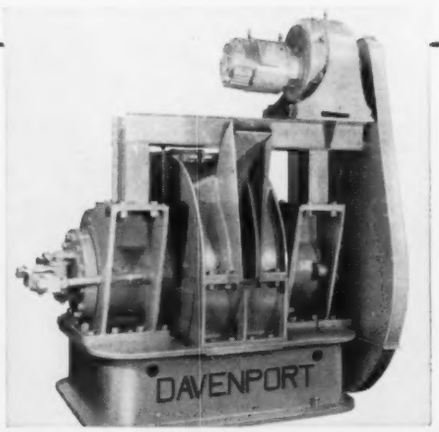
THE DAVENPORT CONTINUOUS PRESS

For extraction of excess moisture from semi-solid materials—especially efficient for dewatering pulp and other fibrous materials, where fibers act as a filtering medium, aiding the screen plates in preventing loss of fines in the liquid which is forced out.

As these presses are continuous, they require little attention from the operator except for starting and stopping, with considerable saving in manpower. The process is completely mechanical, with low power consumption and high capacity. And because of its extremely rugged construction, maintenance costs are exceptionally low.



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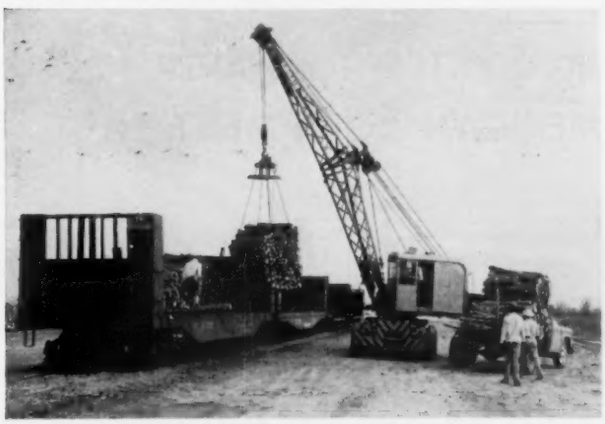
MOTO-CRANES — *for the last word in high-speed unlimited mobility in covering wide areas, Lorain Moto-Cranes are the answer. Available in capacities from 7 to 75 tons, these 2-engine, rubber-tire machines can serve widely scattered yard operations or travel to the job in the woods. Certain models also available on commercial trucks, as shown in the illustration.*



SELF-PROPELLED CRANES — *for localized mobility, the single-engine Self-Propelled crane is efficient and economical. Available in capacities from 7 to 30 tons, these models are one-man operated... 4 travel speeds... simultaneous hoist, swing and travel. Ideal where many moves around a yard are required.*

GANTRY-MOUNTED RAKE *unloads pulpwood from rack cars to mill flume in 5 to 6 minutes per car. This special Lorain unloader reaches to the far side of the rack car — then quickly "rakes" logs off the car. Rakes are available also on crawler and rubber tires.*

LORAIN CRAWLER CRANES — *where rubber-tire mobility is not needed, Lorain crawler cranes are big producers. A big 60-ton Lorain with pulpwood grab is shown above. Below, a 20-ton Lorain with special pulpwood grapple is shown unloading rack cars. Lorain crawler cranes are available from 8 to 60 tons.*

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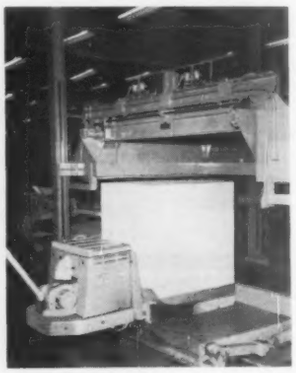

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Developed and proven for one of the leading paper mills in the industry. The Ream Stacker has been operating successfully for a period of 2 years. Trimmer production is increased with less personnel required, because lifting or folding of the reams is not necessary as with hand stacking. This unit handles a full trimmer cut directly onto the skid. The maximum sheet size is 60" x 78". The maximum height of stack is 76" plus skid height.

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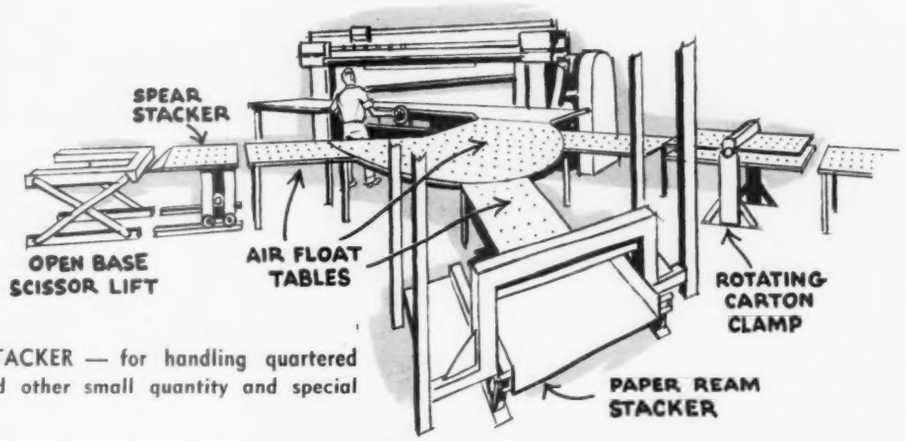

1. SPEAR STACKER — for handling quartered sheets and other small quantity and special orders.

2. ROTATING CARTON CLAMP — for all carton shipments. The operator places a bottom of carton over paper reams, then the carton clamp grips and rotates the package. It then emerges reversed for placement of carton top.

3. PAPER REAM STACKER.

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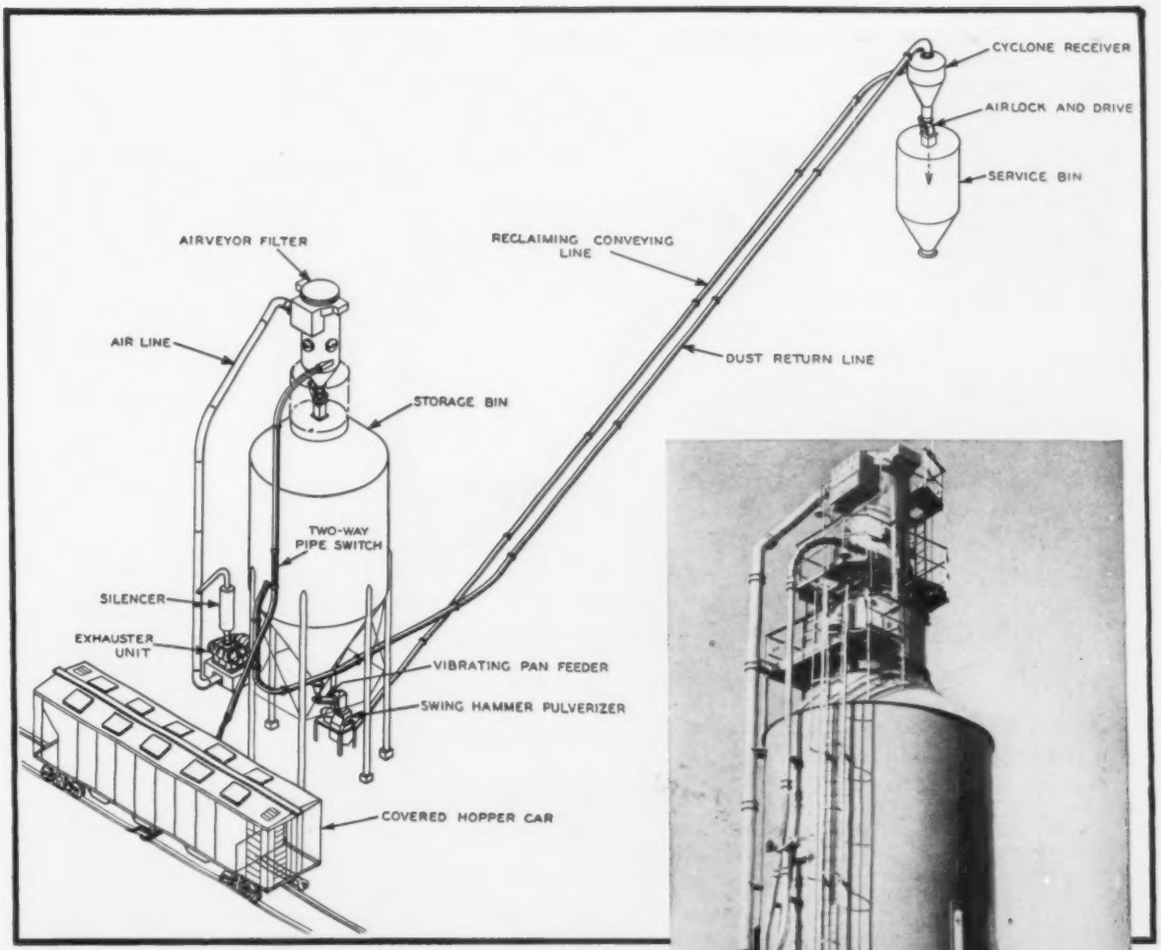

Another "Blue Chip" company installs The AIRVEYOR

Again, the Airveyor goes to work in the pulp and paper industry . . . this time for the $30 million, 350-ton bleached sulphate pulp and paperboard mill of the East Texas Pulp and Paper Company at Evadale, Texas.

The Airveyor unloads salt cake from either box or hopper-bottom cars, conveying to a main storage bin at rate of ten tons an hour. Also reclaims from storage and delivers to a service bin or feeder hopper above a mixing tank in the recovery building at rate of 8 tons an hour. One exhauster unit furnishes air for both unloading and reclaiming.

A second Airveyor system is also installed for the handling of wood chips received at the plant in trucks. Chips are discharged from a drag feeder to the Airveyor and conveyed a distance of 450 feet to storage at rate of 30 units an hour.

More than 150 Airveyor systems are in operation in the pulp and paper industry in the United States and Canada.

With over a quarter of a century of experience in air-conveying, Fuller engineers are well qualified to make a study of your problems and recommend equipment best suited to your needs. We will be glad to work with you.

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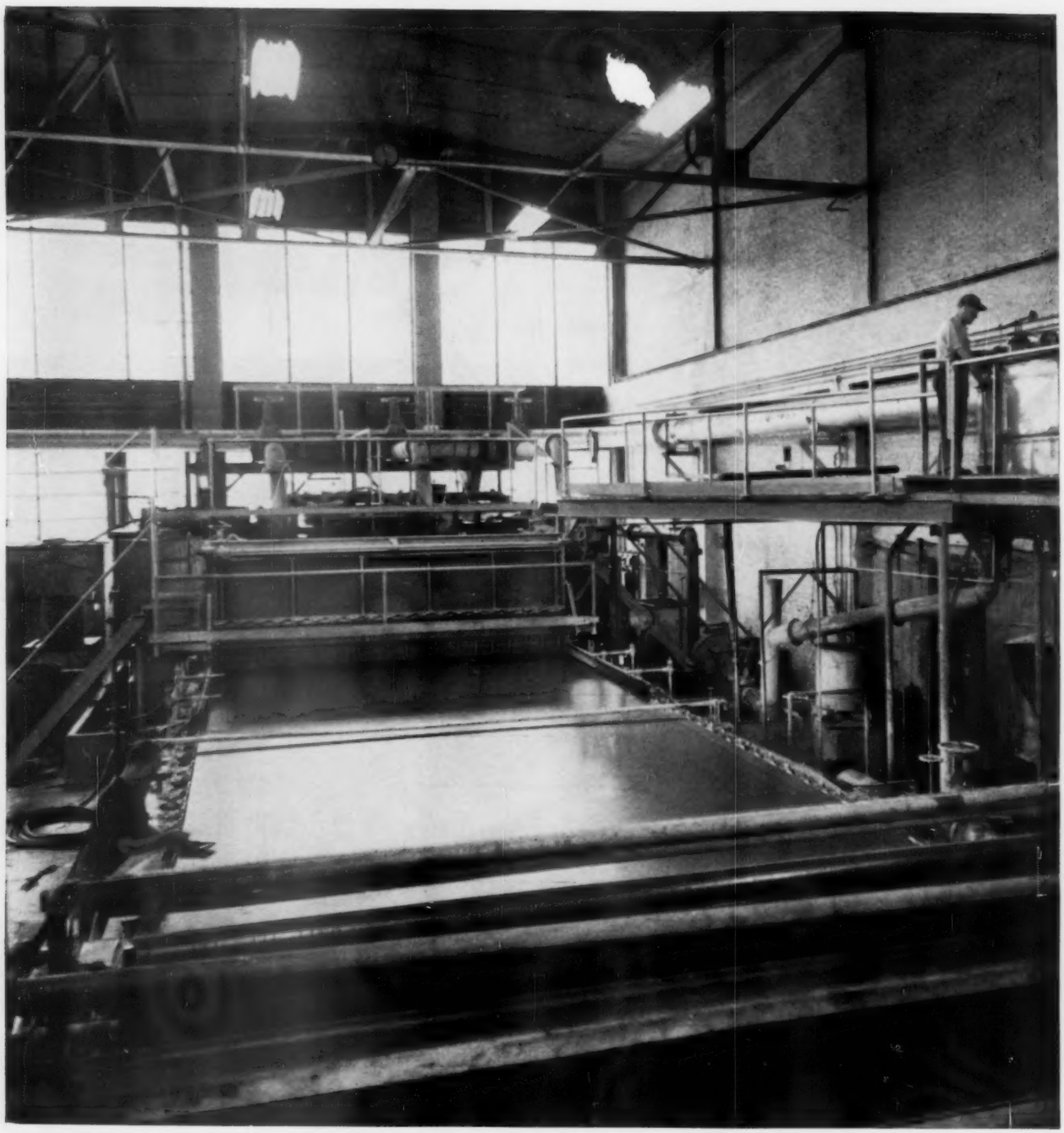

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World's Widest Range of Standard Steels

CLEAN-UP AND MAINTENANCE TIME CUT IN HALF

Allied Paper Corporation's conversion to stainless steel pays off in cleanliness, uniform quality, minimum maintenance, reduced costs . . . . . .

Allied Paper Corporation operates three pulp-blending and paper mills at Kalamazoo, Michigan, producing a complete line of coated and uncoated book papers, and coated photographic papers.

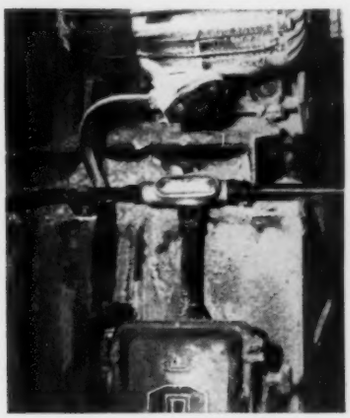
Faced with the common industry problem of high operating and material-costs and the ever-present danger of losing a batch of quality stock due to inclusion of corrosion or other contaminating matter, Allied inaugurated a conversion program. Older equipment, made from less versatile materials, is systematically being replaced with stainless steel, thus assuring extreme cleanliness, and safeguarding product quality.

Although the program of replacing with stainless is only partially completed, Allied is already enjoying a 50% reduction in their weekly clean-up and maintenance time.

The reason? Stainless steel is so easy to clean and keep clean. Usually, a simple flushing with water or diluted acid solution brings stainless back to sparkling cleanliness. Another reason is the fact that stainless steel is solid. There's no applied surface to crack, chip, flake or peel. Its smooth, hard, sanitary surface offers little foothold for contaminants. Stainless provides the highest resistance to corrosion of any commercial metal.

These are but a few advantages that only stainless steel can give you. But, don't forget its "bonus benefits": high strength, heat resistance, abrasion resistance, eye appeal, long life, ease of fabrication, low ultimate cost.

Selection of the proper type of stainless steel is extremely important. Republic—world's largest producer of alloy and stainless steels—will help you make that selection. Our field metallurgists are ready to work with you and your equipment-supplier in applying the many available Republic ENDURO® Stainless Steel analyses to best advantage. There's no obligation.



CUT MAINTENANCE COSTS OF ELECTRICAL RACEWAYS. In this pulp mill, Republic Dekoron®-Coated Electrical Metallic Tubing resists the corrosive action of fumes and steam. This easily installed electrical raceway gives you the double protection of a polyethylene coating over a galvanized finish. Moisture-tight, corrosion-protected joints are made by wrapping the threadless connectors and couplings with plastic tape. Dekoron-Coated E.M.T. costs less because it lasts longer. Also available in rigid conduit sizes. Booklet DEK-1 has complete facts. Mail the coupon.

REDUCE REPLACEMENT AND MAINTENANCE COSTS with a corrosion-resistant piping system of Republic ELECTRUNITE® Stainless Steel Pipe. In photo at left, ELECTRUNITE Stainless Steel Pipe, Type 316, is used to carry off highly corrosive alum solution from stainless mixing tank. Stainless offers high resistance to corrosion; provides positive protection against contamination and discoloration. Republic Stainless Steel Pipe's great strength, resistance to high temperature, pressure, and physical damage make it ideal for fluid-materials handling. Send coupon for more facts.

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Send more information on:
☐ ENDURO Stainless Steel ☐ Dekoron-Coated E.M.T.
☐ ELECTRUNITE Stainless Steel Pipe

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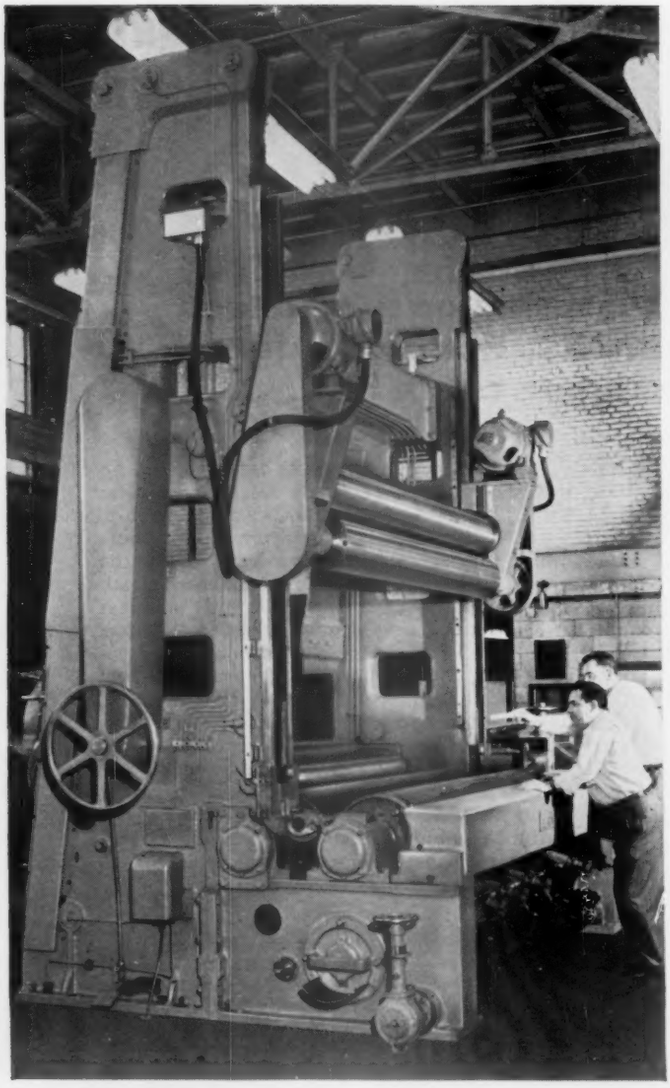
Company_____
Address_____
City_____ Zone____ State_____



Standard design **Langston Slitters & Winders** adapt easily for special application

Here's a Langston Slitter & Winder recently installed at the St. Regis Paper Co. mill at Pensacola, Fla., to wind extremely heavy board. The maximum trim is only 92 in., but the weight of the board and the diameter of the rewound roll demanded a machine of unusual stamina.

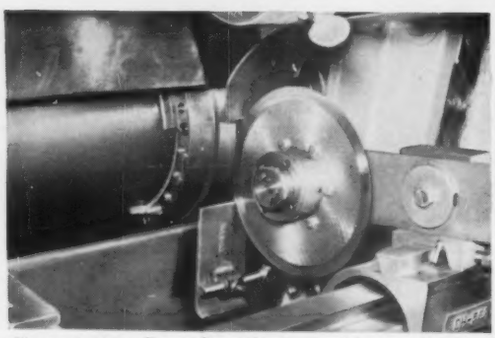
The machine indicated was the Langston Model DH with certain special features: 18-in. diameter drums and idlers that guard against checking of the heavy board, hydraulic roll ejector, automatically controlled air brakes on main drums and idler rolls.

Density of the roll can be held constant all the way from the beginning of the wind, largely as a result of a newly designed hydraulic control of the pressure roll. Starting at a preset value, rider roll pressure is gradually reduced as the rewound roll builds up in diameter, thus automatically compensating for its increased weight.

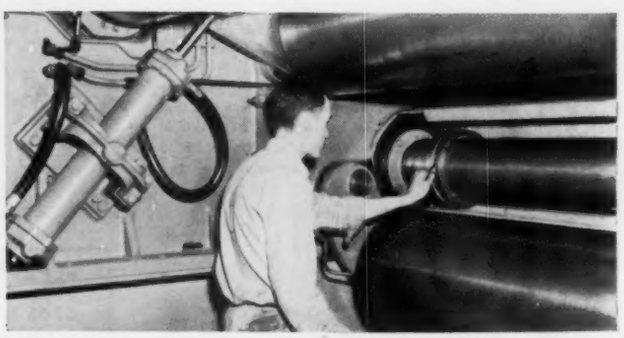
Roll density is further controlled by independent, variable-speed motors at each end of the rider roll. D-c ammeters and tachometers indicate rider roll tensioning effort.

Langston Slitters & Winders are available in a wide range of sizes, types and operating speeds to handle all grades of paper and paperboard. Get complete details.

Write for Bulletin No. 220.
SAMUEL M. LANGSTON CO. Camden 4, N. J.



Shear-cut slitter. Rear slitter is power driven and rotates front slitter by friction. Paper passes between and is actually sheared by the action of the two knives. This means cleaner edges, cleaner paper rolls, cleaner plant.



Setting the slitters. Operator has free access to power-driven slitter knives from either rear or front of machine. Here he measures trim slitter for position. Notice also the 18-in. idler roll beneath his hand and the ejector roll hydraulic mechanism over his left shoulder.

LANGSTON *Leadership—by design*

SHEAR CUT CLEAN CUT

FIRST CHLOR-ALKALI SOURCE in Canada west of the Rockies, new Hooker Chemicals, Ltd., plant on Burrard Inlet, North Vancouver, will supply industry by fast rail and ocean-going barge.

Ready to serve you soon:
new source for chlorine, caustic soda

If your company has, or plans to have, plants in Western Canada, you'll be interested in this newest producing point for chlorine and caustic soda.

Lower freight costs on liquid chlorine and caustic soda, for Western Canadian processors, will be one effect of the new Hooker Chemicals, Ltd., plant at North Vancouver, B. C.

Fast delivery by rail, barge

For rapid delivery, a half-mile rail spur links the plant to the Canadian National Railways system. Chlorine and caustic soda can also be loaded directly on ocean-going barges for shipment to other ports.

Available on short notice from the new plant will be skilled technical service on handling and use of chlorine and caustic soda—backed by 50 years of experience.

New high-efficiency cells

To produce chlorine and caustic soda from purified salt brine, this plant employs the newest, most efficient Hooker Type S-3B electrolytic cells. In addition to their use at Hooker plants in the U. S., Hooker type cells are licensed for use by 32 other companies in 49 locations throughout the world. They produce more chlorine than any other cell.

If you'd like to know how your own chlor-alkali chemical supply position may be strengthened by this newest source, write to *Hooker Chemicals, Ltd., 717 Pender St. West, Vancouver 2, British Columbia.*

HOOKER ELECTROCHEMICAL COMPANY

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HOOKER CHEMICALS PLASTICS

TRONA® *serves the Pulp Industry with*

2 QUALITY PRODUCTS

from 2 DEPENDABLE SOURCES

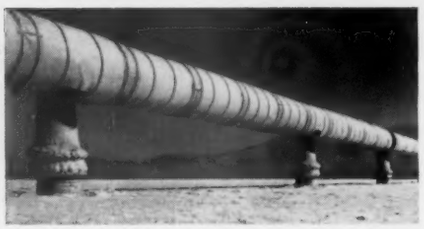
SALT CAKE

OF HIGHEST PURITY

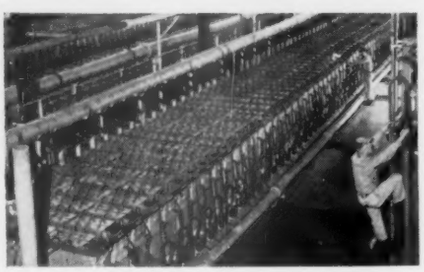
SODIUM CHLORATE

FOR CHLORINE DIOXIDE BLEACH

SEARLES LAKE at Trona, California. Source of *natural* sodium sulphate, essential for quality kraft production



HENDERSON, NEVADA. Source of $NaClO_3$ for the SOLVAY high-stage chlorine dioxide pulp bleaching process.



Add another step forward in American Potash & Chemical Corporation's continuing diversification program! Trona has long been the leading source of *natural* sodium sulphate (Na_2SO_4) from the brines of Searles Lake, so essential in quality kraft production. Now from American Potash & Chemical Corporation (Nevada) (formerly Western Electrochemical Company) Trona serves the industry with highest purity sodium chlorate, used extensively in the SOLVAY high-stage chlorine dioxide pulp bleaching process. Two dependable sources, two quality products—a combination that can't be beat!

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TRONA

Los Angeles New York Atlanta San Francisco Portland (Ore.)

Producers of: Borax · Potash · Soda Ash · Salt Cake · Lithium Bromine · Chlorates · Perchlorates · Manganese Dioxide · *and a diversified line of specialized agricultural and refrigerant chemicals*

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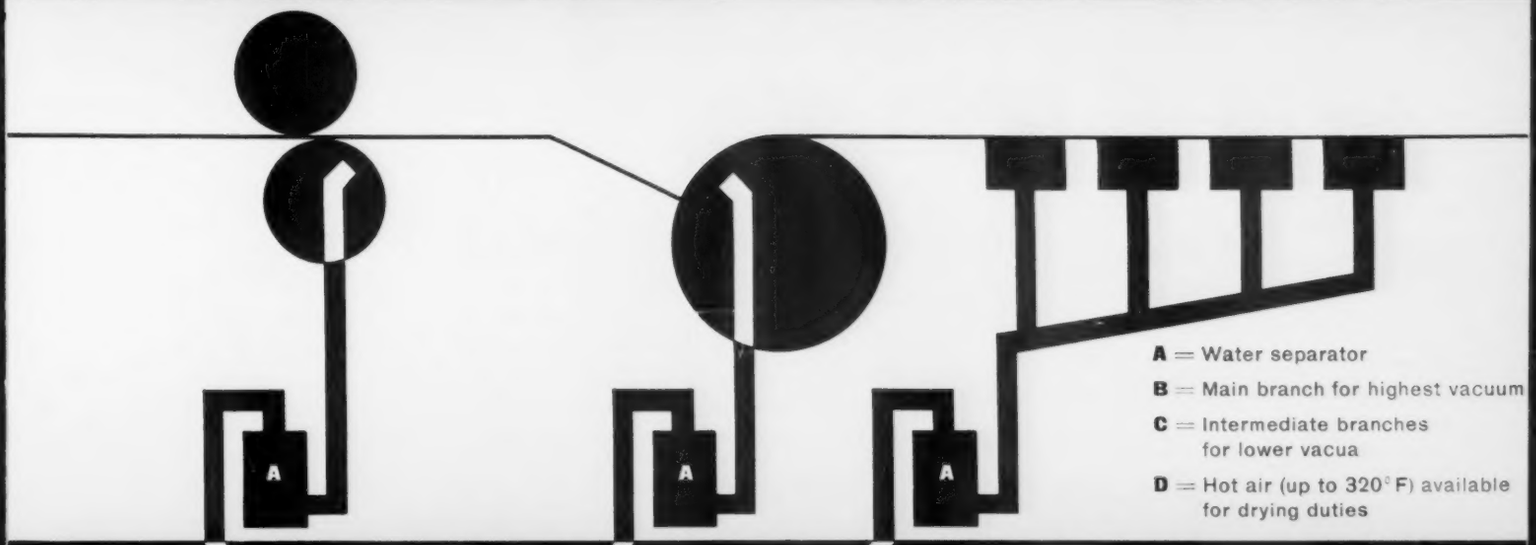
SAN ANTONIO, TEXAS (American Lithium Chemicals, Inc.)

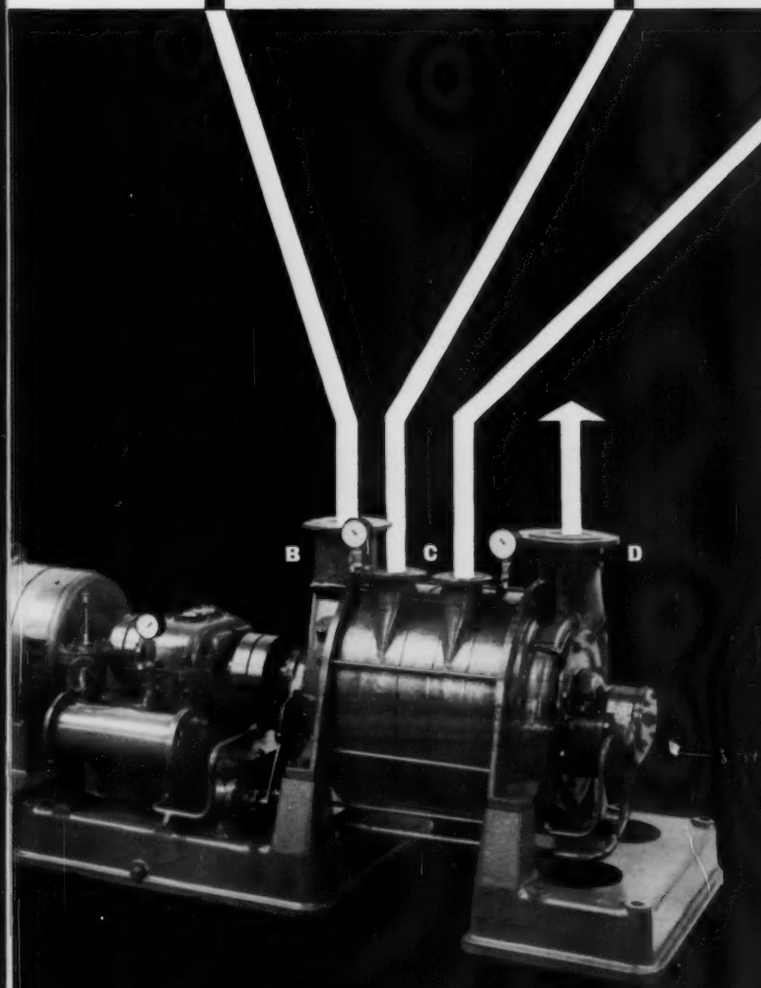
SULZER


A
A
A
A = Water separator
B = Main branch for highest vacuum
C = Intermediate branches for lower vacua
D = Hot air (up to 320° F) available for drying duties

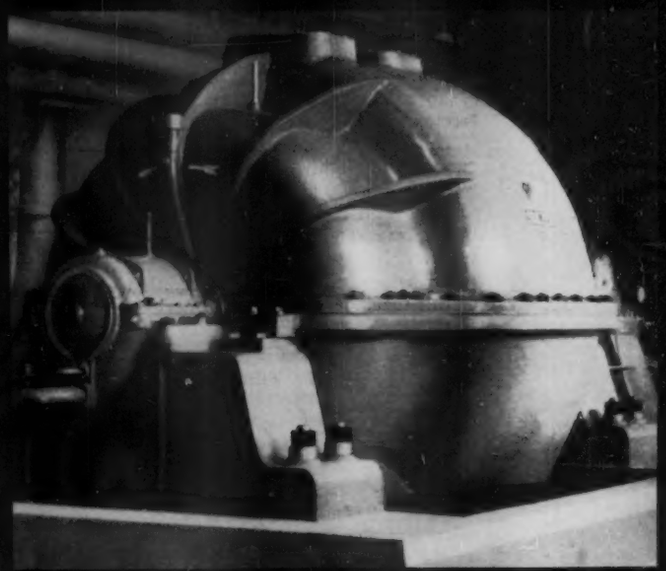
Turbo-blowers

for the new Sulzer vacuum system of water extraction from paper, board and pulp machines ■ Big power saving ■ High adaptability; small space requirements ■ Good references

Over 200 Sulzer Vacuum Blowers are in service in 13 different lands, including Finland, Sweden, Norway, England, Germany and countries overseas.



Turbair Vacuum Blower for Paper Machines
Power savings up to 40%



Large blower for all the suction points of a paper machine o 200 in. wire width.

Sulzer Brothers Limited, Winterthur, Switzerland

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6520 Park Avenue, Montreal 5, Canada

ASIA

Industrialization Spreads Fast

ISRAEL . . . . . .

Industry Thrives Despite War and Tension

Population: 1,850,000. *Per capita paper consumption:* 53 lbs.
Paper mills: 2.

Paper Production	*1955*	*1956*
Paper	16,500	18,150
Paper imports	27,500	30,250
Woodpulp imports	17,600	17,600

Principal paper imports from: Finland.
Principal pulp imports from: Finland, Sweden.

BY K. FEIBELMANN
Sales Manager,
American Israeli Paper Mills Ltd.
—Hadera

The big news in Israel's paper industry this year is the decision, announced in March, 1957 by Robert W. Zion, American Israeli Paper Mills Ltd.'s managing director, to go ahead with plans for major expansion despite unsettled conditions in the Mid-East. Plans include the installation of a second paper machine to increase production potential to a combined total of about 33,000 tons per year, and erection of a 50 ton per day pulp mill.

The new machine will produce a variety of lightweight papers in weights up to 30 lbs., including tissue, manifold and bond, airmail, bible and citrus wrap. The machine will have a wire width of 136 in. and be designed for speeds up to 1,500 fpm. Addition of this machine will enable American Israeli Paper Mills to supply most of the country's growing paper needs.

Two factors contribute to the need for constant expansion of Israel's paper industry—natural population increase and immigration. With a birth rate of 27.3 per 1,000 per year, one of the highest natural rates of increase in the world, and an immigration program estimated at 100,000 per year for the next five years, Israel's population is expected to reach 3,000,000 by 1966.

The decision to install Israel's first pulp mill for paper production was a result of the successful survey of locally available vegetable fiber materials, carried out for the company by Parsons & Whittemore of New York and first reported in the 1956 WORLD REVIEW NUMBER. Final stages of the survey carried out in the United States have shown that quality pulp can be successfully produced from local corn stalks and straw. Sufficient quantities of these agricultural by-products are available each year to supply up to 16,500 tons of pulp.

An additional investment of $10 million is required to finance this expansion program. Ground will be broken in July and both the pulp mill and new machine are to be in production by 1959. Mr. Zion, operating executive of Hudson Pulp & Paper Corp., who has managed the Israeli mill since its inception, will continue to direct its activities.

A new pipeline has been completed to transfer oil from Israel's recently opened southernmost port of Elath to the city of Beersheba. Opening of Elath, which provides Israel with direct access to trade with Africa and the Far East, is spurring the rapid development of Israel's southern desert area, the Negev.

A significant achievement for the future paper industry in Israel is the successful training program that is being conducted. In February the first Israeli trained by American Israeli Paper Mills took his place among our American, British and European papermakers as a fully qualified machinetender. Another five local employes are in advanced stages of training and the papermaking tradition is taking root in this country.

Production Doubled in 1956

BY S. DUBINER
Partner, Cargal Co.

Cargal Co. is the leading converter of paper in Israel, and last year doubled its production by installing new high speed corrugators, automatic stapling machines, new printer slotters and many other intermediate finishing machines. During the first four months of 1957, tonnage equal to the

Blind Man Works at Cargal

One of workers, formerly unskilled refugees, who have learned to do useful work at Cargal Co. converting plant in Bne-Brag, Israel.

total production of 1956 was produced. The built-up area has increased to 160,000 sq. ft. The firm is now supplying sheet stock to finishing plants in the Mediterranean area.

Cargal No. 2 will begin operation in May, 1958. New machines, including a high speed 220-in. corrugator, have been ordered. This factory will be located for export production on railroad sidings a short distance from port facilities.

Modern testing laboratories will be completed shortly at Cargal No. 1. All the latest testing equipment for carton testing will be installed there.

A complete factory for manufacturing 7,000 tons per annum of sodium silicate from Israeli sand will also be put into production in about a year.

Cargal has developed several new containers for fresh and dried fruit. The traditional wooden boxes used in the Middle East for 50 years for packing raisins have been replaced by a special chemically treated Cargal container, cutting costs in half. Most Cyprus shippers of citrus have replaced wooden cases with Cargal cartons. Cartons are replacing wood for potatoes, carrots, grapes, melons, bananas in Eritrea, tea in Kenya, etc.

Opening of the port of Eilat permits cheaper and faster delivery than the Suez Canal for East Africa. Cargal cartons were the first cargo to leave through Eilat since King Solomon's time.

A 12,000-ton paper machine and 18,000-ton semi-chemical pulp mill are planned to begin production in 1959.

■

PAKISTAN . . . . . .

Second Newsprint Mill Now Under Construction

Population: 80,000,000. *Per capita paper consumption:* 2 lbs.
Paper mills: 3. (1 under construction)
Woodpulp mills: 1 under construction
Bamboo and grass pulp mills: 3

(*In short tons*)	1955	1956
Paper Production	23,520	33,600
Pulp Production	15,680	31,360
Paper imports	12,000	22,000
Woodpulp imports	10,000	3,360

Principal paper imports from: Sweden, Canada and U.K.

By NAJMUL SAWIB KAHN

—Karachi

Five years ago, Pakistan was importing practically all the paper it required and its paper industry was almost nonexistent. Today, Pakistan has become self-sufficient in most varieties of paper and is looking forward to being able to export it in the near future.

The year 1956 witnessed a continued expansion of the pulp and paper industry. Endowed with seven million acres of forested land, Pakistan is able to produce most needs, thus relieving the strain imports had been making on Pakistani foreign exchange by about 50 million rupees (approx. $10,400,000), due to the concerted efforts of the Pakistan Industrial Development Corporation.

The Karnaphuli Mills at Chandraghona, East Pakistan, which began to function in Oct. 1953, are presently producing 20 different varieties of paper with an annual value of 45 million rupees. In addition to writing and printing papers, its paper is being utilized for wrapping cloth, yarn, soap, tea, foodstuffs, labels, shoeboxes, cigaret packages, etc.

A new quality of printing paper has been introduced, called "Koran printing," to meet the growing demand in the country for popular editions of the Koran. Successful experiments have been concluded in the production of imitation art paper and tissue paper.

Karnaphuli Mills, employing 4,500 workers, are producing 85 to 90 tons of paper per day from indigenous pulp, a figure slightly under the ultimate goal of 100 tons per day or an annual capacity of 30,000 tons. The mill has three paper machines, two with a productive capacity of 40-45 tons each per day and a third with a capacity of 20 tons per day of machine glazed paper. The Karnaphuli project also includes a pulp mill capable of meeting all requirements of the paper mill, a steam and electricity generating plant, water filtration plant, soda recovery and caustic chlorine plants, workshops and a flotilla, all of which help make the mill

Bamboo Being Floated to Karnaphuli Mill

The Karnaphuli mill uses about 95,000 tons of bamboo annually. Resources of Chittagong Hill Tracts forests, source of this bamboo, are so vast that the mill can maintain a production of 500,000 tons of paper per year indefinitely. Bamboo grows so rapidly that a common saying in Pakistan is, "Never sleep under a bamboo bush."

WILLIAM LOCKE (left), former gen. mgr., pulp div., MacMillan & Bloedel, who resigned earlier this year, has gone to Pakistan to direct construction and engineering for a mill being built there by Sandwell & Co., Vancouver, B.C.

GERRY PENNEY (right), named mill mgr. of the Pakistan mill, has also left for Pakistan by way of the United Kingdom. He was formerly mill mgr. for Bowater's Newfoundland at Corner Brook, Nfd.

PAKISTAN—PAPER IMPORTS
(*in short tons*)

	Wrapping	*Printing inc. news*	*Writing*	*Paperboard*	*All Paper (inc. others)*
1950	6,226	8,871	2,477	3,080	23,516
1951	1,618	11,255	2,537	3,497	21,228
1952	2,500	12,000	2,800	4,000	24,411
1953	2,182	6,766	4,000	6,772	20,000
1954	1,800	6,500	3,200	3,500	15,000
1955	500	8,000	1,200	2,000	12,000

(latest available)

PAKISTAN: PAPER PRODUCTION
(*in short tons*)

	Printing	*Writing*	*Wrapping*	*Total (inc. other)*
1954 ..	—	—	—	20,000
1955 ...	8,800	4,840	7,600	23,520
1956 ...	14,800	4,300	6,900	33,600

a self-sufficient unit. The mill is ideally situated in an area surrounded by thick bamboo forests which extend several miles in all directions and it is flanked by a deep stream providing at once a cheap source of bamboo transportation and an easy supply of the 20 million gallons of water consumed daily in the mills.

A strawboard mill at Rahwali began operations in Dec. 1955 with an estimated annual capacity of 7,500 tons. When in full production, the plant will employ 700 persons. Present production is concerned mainly with the output of unlined strawboards of 100 grams and over and wrapping paper of various types. The mill has also been designed to manufacture straw wrapping paper which will be used in retail parceling, replacing old newspapers now in use, as well as corrugated boards. The mill uses cereal straws.

The Amangarh high grade board and paper mill at Nowshera, West Pakistan, began production in Nov. 1955, costing approximately 18.4 million rupees (about $3½ million) to construct. When in full swing, the plant will produce 20 to 30 tons of high grade boards per day, depending on quality. The annual capacity of the mill, 7,500 tons, is valued at 3.30 million rupees. Using local grasses and straws, the mill produces a variety of boards, bleached, colored, etc. New machinery will soon make possible the production of ivory boards and art cards. Connected with the mill is a 3,000 kw power station with three boilers each of 25,000 lb. per hour capacity. The 2½ million gallons of water required daily are pumped from the nearby Kabul River filters.

The proposed newsprint plant at Khulna, East Pakistan, won governmental approval in Aug. 1956 and preliminary clearing and construction work is now in progress, with the aid of machinery and technical advice from Sandwell Co., Vancouver, B.C., engineers. The site is near the Sundarban forest of 1,600 square miles, which will provide the required semi-hard wood raw material. The project represents the largest Pakistan Industrial Development Corp. undertaking in East Pakistan and should be completed within three years. The mill is expected to make Pakistan self-sufficient in newsprint and ensure a rapid growth of newspapers. The mill has been planned to produce up to 25,000 tons of newsprint and 12,000 tons of mechanical printings annually by mid-1959. The total estimated cost of the Khulna project is over $24 million. In 1953, the annual requirement of newsprint in Pakistan was estimated to be 8,000 tons. According to a recent UN FAO report, there will be a requirement of 23,000 tons by 1962 and 41,000 tons by 1972.

The Pakistani paper and pulp industry is moving forward consistent with the aims of Pakistan's Five Year Plan.

■

Loading Paper Packets for Shipment

Paper from Karnaphuli mill is being loaded for shipment down the Karnaphuli River to Chittagong. Marketing is done through wholesale distributors and direct sales to Central and Provincial governments.

INDIA . . . . . .

Paper Industry to Expand Under Second Five-Year Plan

Population: 380,000,000. *Per capita paper consumption:* 2.0 lbs.
Paper mills: 20
Strawboard mills: 5

Production (short tons)	*1955*	*1956*
Paper	207,071	216,609
Chemical pulp	3,360	3,360
Groundwood pulp	8,400	11,200
Straw pulp	28,000	42,560
Paper imports	157,216	158,549
Paper exports	2,256	2,669
Woodpulp imports	18,849	—

Principal paper grades made: kraft, sulfite, book, writing, paperboard, tissue, newsprint
Principal paper imports from: Scandinavia, Canada, Austria, United Kingdom, West Germany
Principal woodpulp imports from: Canada, West Germany, Sweden
Principal paper exports to: Southeast Asia

BY DR. R. V. BHAT
Officer-in-Charge, Cellulose and Paper Branch, Forest Research Institute
—Dehra Dun

The Indian paper industry reached a record production of 216,609 short tons of paper and paperboard in 1956, against the first Five Year Plan target of 220,000 tons to be attained by March 1957.

Of this production, writing and printing paper accounted for about 64%, wrapping paper 16%, paperboard 17% and specialty papers 3%. Better quality kraft paper from bamboo was manufactured by two mills.

SECOND PLAN TARGET . . . In the second Five Year Plan period, the paper industry is expected to produce 390,000 tons of paper and paperboard and 112,000 tons of newsprint. Production of security papers, including currency paper, is also envisaged.

In order to achieve this, the government of India has granted licenses to

INDIA—WOODPULP IMPORTS

(in short tons)

1950	8,565
1952	6,245
1953	13,824
1954	14,339
1955	23,000
1956	30,000

INDIA—PAPER PRODUCTION

(in short tons)

	Printing and Writing	*Wrapping*	*Paperboard*	*Specialties*	*Total*
1946	71,390	17,257	20,446	7,506	116,599
1952	100,573	23,667	24,013	3,101	151,355
1953	107,103	23,144	21,853	3,830	155,930
1594	104,286	24,437	23,281	4,577	156,581
1955	133,836	31,716	35,240	6,279	207,071
1956	137,749	34,626	37,770	6,465	216,609

nine existing mills for expansion of their production capacity by 153,000 tons. Thirteen new units with a total annual production capacity of about 200,000 tons have also been licensed. A new feature is the promotion of small units of about 5 1/2 tons daily capacity; nine such units with a total annual production capacity of 17,400 tons have been licensed. The licensing of greater production capacity than that envisaged in the second Five Year Plan will ensure the fulfillment of the Plan target even if some projects do not materialize.

NEW PULP MILLS . . . At present, the Indian mills are integrated units producing both pulp and paper on the same premises. The first departure from this is being set by a mill in West Bengal which proposes to build a 112-ton per day unit in Assam for the manufacture of bamboo pulp. This pulp will be transported to the existing paper mills in West Bengal.

Another firm is considering the building of a dissolvinng pulp mill (PULP & PAPER, 1956 World Review Number). Although India has four viscose rayon spinning plants and more capacity is contemplated in the second Plan period, the country depends at present entirely upon imports for its requirements of dissolving pulp.

PAPER VARIETIES PROPOSED . . . Since suitable species of wood are not available at present for the manufacture of newsprint to meet the full requirements of this commodity, the government of India is considering setting up a 112-ton per day unit in South India for producing newsprint grade paper from sugarcane bagasse. Negotiations are being conducted with a German firm for building this mill.

Although bamboo will continue to form the bulk of the fibrous raw materials of the Indian paper industry in the near future, bagasse is likely to be used to an increasing extent. A 66-ton unit is being projected in Uttar Pradesh (in northern India) for the manufacture of writing, printing and wrapping papers from bagasse. Success of this plant will lead to the setting up of more units from this cheap fibrous raw material.

Glassine paper is expected to be produced this year when the new 11-ton plant goes into production in Bombay State. At present this mill intends to use imported sulfite pulp. It is hoped that suitable pulp for use in this mill will be manufactured in India. Research work carried out recently on bamboo at the Forest Research Institute, Dehra Dun, has yielded encouraging results. Other fibrous raw materials are also being investigated at Dehra Dun.

A fine paper mill in Uttar Pradesh is planning to manufacture kraft paper from twisted **chir** (pine) which grows in some forests of this state.

GOVERNMENT HELPS INDUSTRY . . . The government of India has been taking every possible step to help the growth and development of the paper industry. Recently, a "Panel for the Pulp and Paper Industries" has been set up to advise the government on steps to be taken to ensure continuous supplies of raw materials, on varieties of papers to be manufactured, etc.

The Cellulose and Paper Branch of the Forest Research Institute at Dehra Dun is being reorganized at a total expenditure of about Rs. 5,000,000 ($1,000,000). More and better facilities for research have recently been provided and a post-graduate course in pulp and paper technology was to start in August this year.

More About New Mill

—Delhi

Manubhai Shah, minister for Heavy Industries, speaking here at the first meeting of the Panel for the Paper and Pulp Industry, said that the proposed newsprint mill mentioned by Dr. Bhat would be built by India's National Industrial Development Corp. at Shakarnagar, near Hyderabad. It will use the neutral monosulfite process developed in West Germany for pulping bagasse, and will be built according to plans provided by the West German firm, Aschaffenburger Zellstoffwerke.

Mr. Shah also mentioned the possibility of government restrictions on importing old newspapers, a move which has since been taken. Old newspapers are worth $80 a ton on the Indian market, and the price is expected to go higher now that imports have been cut. Old newspapers, and containers made from them, are used to wrap food, at an annual consumption of about 80,000 tons. About 22,000 tons are imported.

Production of paper and board increased from 127,600 tons in 1950-51 to 216,600 tons in 1956, Mr. Shah pointed out, while consumption increased from 149,900 tons to 264,880 tons during the same period. Consumption is expected to be 390,000 tons by 1961, pointing up the need to increase India's production.

Studying U.S. and Canadian Industry

Dr. R. V. BHAT (right), author of this article on India, and head of the Cellulose and Paper Branch of India's Forest Research Institute, has been touring the U.S. and Canada under the Indo-U.S. Technical Assistance Program, to become acquainted with new developments in the industry and methods of teaching pulp and paper technology. Here he is having a close look at sweet gum logs stored in the woodyard of International Paper Co. at Natchez, Miss.

■

TURKEY . . . . . .

Will Add Three New Machines, 38,500 Ton Capacity, in '57-8

Population: 22,500,000. *Per capita paper consumption:* 7.7 lbs.
Paper mills: 3. *Woodpulp mills:* 1.
Strawpulp and rag mills: 2.

Production (short tons)	*1955*	*1956*
Paper	49,500	50,000
Chemical woodpulp	12,980	13,028
Mechanical woodpulp	19,800	20,000
Straw pulp	3,346	3,168
Rag pulp	1,005	605
Paper imports	38,500	40,000
Woodpulp imports	3,000	3,000

Principal paper grades made: All kinds.
Principal paper imports from: Finland, Sweden, Canada.
Principal pulp imports from: Sweden.

—Izmit

Turkey's current foreign exchange shortage and inadequate domestic production facilities prevent satisfaction of annual paper and board requirements estimated at about 130,000 tons. The state-owned Turkish Cellulose and Paper Factories Establishment (Seluloz Ve Kagit Fabrikalari Isletmesi Umum Mudurlugu) at Izmit constitutes practically the entire industry. The only other mills are a few primitive ones in Istanbul which produce coarse butcher paper from straw pulp, with a combined annual production of about 3,300 tons. There is also a small amount of rag paper produced.

The TCPFE operates three paper mills with seven machines. Mill No. 1, built in 1936, has two 87-in. trim machines making printing, wrapping and board, and a stock preparation plant consisting of beating engines, glue makers, edge runners and a sorting and grinding machine for waste paper. It also has facilities for glazing, rolling and cutting, and for producing envelopes, bags and cardboard boxes.

Mill No. 2, built in 1944, has a new Yankee on a 112-in. machine making lightweight wrapping, a 112-in. newsprint machine and a 68-in. for making cigaret paper.

Mill No. 3, built four years ago, has 112-in. combination machine and a 112-in. strawboard machine. It has stock preparation facilities consisting of two grinders, five chip digesters, three straw cookers, two barking drums and equipment for treatment of white or gray mechanical pulp, straw pulp and waste paper stock.

LEO A. ISAAC, silviculturalist, in Turkey on FAO assignment concerned with reforesting denuded Mediterranean areas. He was with Pacific N.W. Forest Experiment Station, Portland, Ore.

TCPFE plans to add 38,500 tons production potential with the installation of three new machines in 1957-58. They will produce newsprint, cigaret and writing papers. The new mill will be located in the province of Icel.

■

JAPAN . . . . . .

Extends Export Markets, Makes New Records in Production

Population: 90,397,000, *Per capita paper consumption:* 60.1 lbs.
Paper mills: 566; *straw and vegetable fiber pulp mills:* 8
Woodpulp mills: 264

Production (short tons)	*1955*	*1956*
Paper	2,429,064	2,830,885
Chemical woodpulp	1,367,968	1,614,612
Mechanical woodpulp	725,706	802,548
Straw or vegetable pulp	9,031	10,035
Paper imports	1,265	854
Paper exports	86,386	117,108
Woodpulp imports	91,476	156,402
Woodpulp exports	4,418	17

Principal paper grade made: All kinds
Principal woodpulp imports from: Canada, U.S.A., Finland.
Principal paper exports to: Hong Kong, Singapore, Egypt

BY MOTOKI MATSUNAGA
Managing Director, Japan Paper and Pulp Assn.

—Tokyo

The pulp and paper industry in Japan is one of the most important in the country, occupying a very important position in the economy of the nation. The money value of its total production is fifth among all manufacturing industries.

Production of paper and paperboard was seriously decreased in World War II, but rehabilitation efforts since the war have resulted in a quick recovery. Production has risen each year until in 1954 it exceeded the highest pre-war level, and in 1956 it established a new record, totaling 2,830,885 tons. This was 9.5 times the 29,954 tons produced in 1945 immediately after the war ended.

Both paper and paperboard showed increases in 1956—2,009,223 tons of paper in 1956, an increase of 14% over 1955 production, while 821,662 tons of paperboard is an increase of 25%.

DEMAND FOR PAPER HIGH . . . In 1956, production of 571,824 tons of newsprint showed an increase of 15% over the previous year. Last year's production was more than four times as great as in 1950. A further, large-scale increase is anticipated in 1957 and 1958 by adding big high-speed machines to meet the increased demand.

The market for printing paper was also very favorable in 1956, especially in woodfree printing paper. Printing paper production in 1956 was 615,330 tons, an increase of 7% over 1955. Woodfree paper was 228,954 tons of this, up 12% over the previous year. Other printing papers, such as wood-containing papers, simili, art printing paper, etc., came to 386,376 tons, an increase of 4%.

Production of wrapping paper in 1956 was up by 14% to a total of 308,947 tons. Principal grade is coarse kraft paper, with 1956 production total of 180,553 tons, an increase of 22%. Wrapping paper, such as ribbed kraft and M.G. sulfite, came to 128,394 tons, up 4% over 1955.

Production of writing and drawing paper showed a remarkable increase of 28%, for a total of 78,436 tons. Production of tissue paper, including glassine, cigaret and typewriter paper, etc., remained about the same as the previous year at 23,155 tons, while other types of paper above showed an increase of 19% with 411,531 tons.

In recent years the production of paperboard has been increasing con-

Digs Pulp from Blowpit at Gotsu

Sanyo Pulp's mill at Gotsu has two sets of these digging machines, to dig pulp out of blow pits and put it on conveyors to the screen room.

Men and Women Work in Log Pond at Gotsu

Wood for Gotsu mill comes from nearby forests and Sanyo Pulp's other mill at Iwakuni.

Waste Liquor Disposal System

Sanyo Pulp's Gotsu mill has system to oxidize sulfite waste liquor by means of microbes.

tinually, faster even than paper. Production in 1956 was 821,662 tons, an increase of 25% over 1955. This total is more than four times the total paperboard production in 1950.

EXPORTS ARE RISING . . . The first efforts of rehabilitating the paper industry after World War II were designed to meet demand in Japan, but increases in equipment and capacity have become more than sufficient to satisfy domestic needs. Thus export, for which there had been many inquiries, has become possible.

In 1956, 117,108 tons, or 4% of the total production, was exported. This is 31% more than in 1955. Principal items are printing paper and newsprint, constituting 53% of all paper exports. Lately inquiries for kraft and wrapping paper have been increasing.

The destinations of exports have changed. Exports to Far Eastern non-Communist markets have increased remarkably. The following new markets were added last year: South Africa, Turkey, Colombia, Bolivia, Uruguay and Mexico.

WOODPULP PRODUCTION GROWS . . . Production of pulp for paper has steadily increased, reaching a record 1,993,832 tons in 1956, up 12% over 1955. Production of sulfite and soda pulp was the same as the previous year, but sulfate, semi-chemical and other pulps have shown an extraordinary increase of 30 to 50% compared to 1955. This is due to the efforts of pulp producers to use hardwoods, which are abundant in Japan. About 22,400 tons of pulp for paper was imported, principally from Canada, U.S., and Finland.

Production of dissolving pulp increased 34% in 1956, as the rayon and acetate industry showed a record expansion. Demand is so great, that about 134,400 tons of dissolving pulp was imported, chiefly from Canada and the U.S.

NEW MILL IN CENTRAL JAPAN . . . Sanyo Pulp Co., Ltd., recently started up a sulfite pulp mill at Gotsu, in Shimane Prefecture, on the west coast of Japan. The town was formerly an agricultural center but became industrial when Nippon Rayon Industry built a rayon factory there in 1932. The rayon plant was made into Shimane Chemical Co. during World War II and, in 1951, Shimane merged with Sanyo Pulp and began construction of the pulp mill.

Production of over 120 tons a day consists mainly of unbleached sulfite pulp. A bleach plant is being installed and production will shift to rayon grade pulp like the firm's other mill at Iwakuni.

The mill has two Sumner 8-knife chippers, Kamyr barkers, three 18 ft. x 45 ft. vertical digesters, six large blow-pits, five Bird Jonsson knotters and one 142 in. Fourdrinier-type pulp machine with three presses and 40 dryers.

The mill has access to large forests nearby, and is on the mouth of the River Gou, one of the largest in central Japan. About 200 to 300 cords are consumed each day, over 80% of it shipped in by rail.

USE BUGS TO DISPOSE OF WASTE . . . Prof. Saburo Shibata of Resources Council of Japan directed building of the waste liquor disposal system. Sulfite waste liquor is oxidized by means of microbes such as plankton, algea, protozoa, aero bacteria and ferment fungus. Waste liquor and white water from the mill are diluted, with B.O.D. controlled, and sprayed on lime stone for filtering. This goes into a settling tank and overflow is drained out to sea.

Executives of Sanyo Pulp Co., Ltd., are: Pres. Taunekazu Namba; Vice Pres. Yasukuni Yasuba; Mgr. Directors Tsugutaka Miwa i/c production, Taro Suzuki i/c gen. affairs and personnel, Mineo Fujimoto i/c Iwakuni mill, Hideo Maeda i/c business. Directors are: Kiyoshi Nakamura, production mgr.; Takeo Okamura, asst. gen. mgr. Iwakuni mill; Ryoichi Kubo, gen. mgr. Gotsu mill; Yataro Ishikawa, chief accountant; and Kazumi Higaki, standing auditor.

SECOND CONTINUOUS DIGESTER . . . Takasaki Seishi K.K. at Nikko is installing a Pandia 4-tube continuous digester supplied by Black-Clawson Co. (U.S.A.), with 15 in. screw feeder, 42 in. diameter tubes, and 28 in. discharger, equipped for cooking liquor circulation in the impregnation stage. Production will be about 132 tons a day of high yield kraft from Japanese red pine, beech and birch to produce a good grade of linerboard. Takasaki currently op-

JAPAN—PULP PRODUCTION

In Thousands of Short Tons

	Sulfite (Rayon)	*Sulfite (Paper)*	*Sulfate*	*Soda Other Chem.*	*Gr'nd Wood*	*Total*
1938	113	444	69	3	419	1,050
1941	326	481	84	117	463	1,410
1949	50	188	33	8	314	595
1950	111	230	64	34	386	824
1951	190	304	100	85	516	1,195
1952	205	398	158	58	549	1,366
1953	248	484	247	59	624	1,662
1954	297	470	317	50	649	1,799*
1955	308	490	480	40	725	2,094*
1956	409	550	537	37	803	2,418*

* Also includes 16,000 tons of semi-chemical in 1954, 50,000 tons in 1955, and 81,733 tons in 1956.

JAPAN—PAPER PRODUCTION, IMPORTS, EXPORTS, CONSUMPTION

(In thousands of short tons; except per capita figures in lbs.)

	Produced	*Imports*	*Exports*	*Consumed Total*	*Consumed Capita*
1937	1,600	70	135	1,535	43
1946	231	—	2	229	6
1949	695	12	6	701	17
1950	962	0.1	22	941	23
1951	1,286	1	48	1,239	29
1952	1,479	9	17	1,472	34
1953	1,942	14	19	1,529	44
1954	2,119	4	65	2,058	47
1955	2,429	10	85	2,354	52.5
1956	2,831	0.9	127	2,705	60.1

(1937 and 1946 were high and low record years prior to the recent peaks).

Source: Ministry of International Trade & Industry. Japan Paper and Pulp Assn.

erates seven Fourdrinier and six Yankee machines, making paper, strawboard, sulfate and kraft pulp, and groundwood pulp.

The first Pandia continuous digester in Japan was installed at Kanzaki Paper Mfg. Co., Ltd., in Osaka (WORLD REVIEW NUMBER 1956). Kanzaki is Japan's largest manufacturer of coated papers.

■

RED CHINA . . . . . .

Plan Is Revised Upward as Production Tops Original Goal

Population: **602,000,000;** ***Per capita paper consumption:*** **3.3 lbs.**
Machine-made paper mills: **15**

Production (short tons)	***1955***	***1956***
Paper and board	**878,900**	**1,028,500**
Paper imports	**30,000**	**30,000**
Newsprint imports	**12,000**	**12,000**
Newsprint exports	**35,300**	**40,000**

Principal paper and pulp imports from: **Russia, Finland, Sweden, Norway, Poland**
Principal paper exports to: **Ceylon, Burma, Indonesia**

—Peiping

Chinese paper production in 1956 is reportedly one year ahead of the current Plan target. Under the present Five Year Plan, 13 paper mills have been re-equipped and two new ones completed.

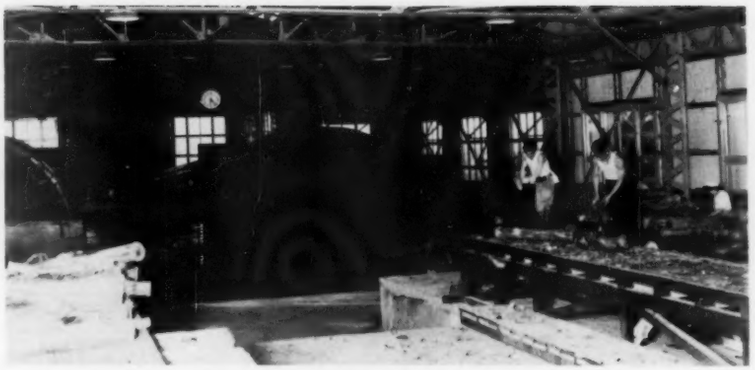
The Forestry Division of FAO reports that China's handicraft paper industry accounts for about 26% of total production. The current regime is encouraging the handicraft industry because, besides making possible increased output without heavy capital investment, it furnishes employment in an economy where unemployment is a serious problem. Under the plan for 1957, 30% of total production will consist of hand-made paper.

REHABILITATING EXISTING MILLS . . . Modern paper mills were set up in China toward the end of the 19th century, about 1,700 years after paper was first made in this country. Both the machinery and pulp to supply it were imported. After the Sino-Japanese War and the Civil War, most of China's paper mills were out of operation. During the past seven years, the government has attacked the problem of rehabilitation.

Red China—Paper Production
(in thousands of short tons)

	Machine-made	*Hand-made*	*Total*
Prewar (1943)	182	83°	265°
1949	116	50°	166°
1950	165	88°	253°
1951	275	132°	407°
1952	409	184°	593
1953	468	198°	666°
1954	612	215°	826°
1955	648	231°	879°
1956 Revised plan	781	247°	1,028°
1957 Original plan	721	261	982
Revised plan	880	264°	1,144

Note: The figures with an asterisk are Secretariat estimates; all others are either published or derived from published percentages.
SOURCE: *Food and Agriculture Organization.*



Kamyr Drum Barkers in Gotsu Mill
The wood preparation room has two Kamyr type drum barkers, two 72-in. eight-knife Sumner chippers and a Japanese-made vibrating flat screen.

The Tsientsin State paper mill, started by the Japanese in 1939, was by 1952 producing three times the average annual output attained under the Japanese occupation. In the northeast, the Kirin State paper mill, whose daily output had fallen to 22 tons, was re-equipped and daily output raised to 165 tons. At the Canton State paper mill, on the southern coast of China, machinery which had been removed by the Japanese was recovered, re-installed and, by the beginning of 1951, again producing newsprint.

By early 1954, twelve paper mills had been reconstructed, including the Kongmoon mill in Kwantung province, where new Kamyr-type pulping machinery was installed, and several other privately-owned mills.

BUILDING NEW MILLS . . . Two new State paper mills have been opened in Kiangsi and Hupeh provinces, and are reported to be entirely equipped with Chinese-made machines. In Tientsin and Shanghai, the centers of the pulp and paper machinery industry, grinders, digesters, filters and bleaching tanks are among the equipment being produced.

The most important project is being fitted with Soviet equipment, with help from Soviet technicians, including site surveys, designs, installation, training of personnel and help in initial operation. This new mill, at Kiamusze in northeast China, is due for completion this year. It will draw its wood from neighboring forests and coal supplies from the nearby Hokang mines. It includes a large sulfate pulp mill and will produce industrial papers, kraft wrapping, bag papers, electrical insulating and other papers, as well as 11,000 tons of market pulp.

In all, the 1953-57 plan calls for an increase in annual capacity of new mills in the machine-made paper industry of 204,600 tons, of which 44,000 tons had been completed by the end of 1955, and about 104,500 are expected to be in operation by the end of 1957. The latter figure depends on the completion of seven out of ten new mills projected.

The machine-made paper industry has exceeded production figures set forth in the Five Year Plan, so that the original goal of 721,000 tons in 1957 has been revised upward to 880,000 tons. The original plan included 169,000 tons of newsprint. The figure mentioned for machine-made paper in proposals submitted to the State Council for the second Five Year Plan (1958-1962) is 1,600,000 to 1,700,000 tons.

RAW MATERIAL IS PROBLEM . . . China, with about one-fourth of the world's population, occupies territory about one-third larger than continental United States. At present China's forest resources are insufficient to supply timber for construction, fuel and other uses, and pulpwood for papermaking, too. New reserves have been discovered but they are in inaccessible areas, so alternative materials are essential.

Bamboo, first used to make paper in China during the third century, today accounts for about half of all raw material supplies for the industry. It is reported that experiments carried out by a Soviet expert, N. Z. Veretchin, have led to the production of newsprint with a furnish of mechanical bamboo pulp combined with 40% chemical woodpulp. Mr. Veretchin is also credited with introducing semi-

chemical rice straw pulp. The process was first used on a large scale in 1952 at the Peking State paper mill and has since been widely adopted. In southwest China, bagasse has been used for some time to produce board. Today, fine papers are being made from bagasse by a process, developed by Mr. Veretchin, which reportedly does not require removal of the pith.

Efforts are being made to salvage more rags and waste paper. Li Fu-Chun, in his report on the first Five Year Plan, emphasized the need for strict economy and pointed to the gains which could be secured, without capacity increase, through more effective measures to reduce waste.

It is reported that the old-established Yungli plant in Hopei province, a joint State and privately-owned enterprise, has been greatly expanded in recent years. This plant is the principal supplier of soda ash to China's pulp and paper industry.

IMPORTS AND EXPORTS . . . Language reforms intended to result in phoneticizing the language and increased school enrollments to over 60,000,000 pupils by 1957 are part of an energetic campaign to reduce illiteracy in China. Rising literacy and advancing industrialization make a continued growth in paper needs inevitable. Whether or not the planned expansion can meet these needs is uncertain. China still must import paper now.

Imports from Finland in 1955 totaled 24,000 tons, including 10,000 tons of newsprint, more than double the corresponding figure for 1954. Under a trade agreement between China and Finland during the period from May 1, 1956 to Apr. 30, 1957, China was scheduled to import 24,200 tons. China also imports smaller quantities from other European countries, either directly or through Hong Kong.

China has also become an exporter of paper, however, and notably of newsprint. The recently expanded Kwantung mill is reported to be the supplier of newsprint for export to Ceylon, Burma and Indonesia, under recent trade agreements. Total newsprint exports from China reached 35,200 tons in 1955, compared with 4,950 tons in 1954.

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HONG KONG . . . . .

Imports Up From Japan, China; Local Consumption Higher, Too

Population: 2,260,000. *Per capita paper consumption:* 42.5 lbs.

	1955	1956
Paper Imports	95,042	92,289
Paper Exports	38,669	43,976
Paper Consumption	56,373	48,313

Principal paper imports from: Japan, China, Sweden, Austria
Principal paper exports to: South Korea, Thailand, Indonesia, China, Indo-China

—Hong Kong

Hong Kong has no pulp or paper mills but is one of the most important paper trading centers in the Far East. Paper imports have risen from 34,800 tons in 1953 to 93,000 tons in 1956; exports from 8,800 tons in 1953 to 44,000 tons in 1956.

Mr. Anker B. Henningsen of Henningsen and Co. Ltd., Hong Kong, again furnishes PULP & PAPER with the following exclusive report on developments in Hong Kong during 1956:

The most interesting feature of the year's paper trading is the increase in supplies from China and Japan.

Owing to a carry-over of stocks from 1955, there was a reduction in newsprint imports, which totaled 23,342 (short) tons, approximately 15,680 tons less than in 1955. Of the total imports, Japan supplied 10,916 tons, China 4,143 tons, and the balance was obtained from Finland, Norway, U.S.A., Canada and Austria. Exports of newsprint were 16,726 tons, supplied mainly to South Korea and Thailand.

Imports of printing and writing paper other than newsprint came to 24,628 tons, of which Japan supplied 8,204 tons, China 7,309 tons and Austria 6,033 tons. The balance was supplied in small quantities from a variety of sources. Exports of printing and writing paper totaled 12,554 tons and were sent to China, Indo-China, South Korea and Thailand.

Packing and wrapping paper imports amounted to 13,720 tons and exports were 5,387 tons. The local consumption of these types of paper is increasing rapidly as new converting plants are established in the colony. The main suppliers were Japan, Sweden and China, and the bulk of the exports were forwarded to South Korea, Thailand and Indonesia.

Strawboard imports, which were mainly for local consumption, totaled 10,349 tons, of which about 4,480 tons were supplied each from Japan and China, and 1,008 tons from Formosa.

"The 1955 figures were rather misleading as, although the consumption has increased, there was a substantial carry-over of tonnage to 1956," says Mr. Henningsen. "During the year exports have remained at approximately the same level, but total consumption had increased.

REFUGEES ARE PROBLEM . . . "In our report for 1955 we wrote of some of the problems of Hong Kong, and it will not be out of place this year to quote from the Hong Kong Annual Report for 1956, in which an article discusses the origins, results and future implications of the colony's tremendous refugee problem, as it is against this background that any picture of the colony during 1956 must be set. To quote from it:

"When one sees a child, or even a dog, run over by a motor-car one hurries to help, and the emotions of horror and pity do not die easily. But when one reads of one million homeless exiles all human compassion balks and the great sum of human tragedy becomes a matter of statistical examination. Personal charity is largely unavailing, vast schemes of national relief are a temporary palliative. Eventually the last vestiges of

Rice, Not Trees, in Hong Kong

There is always a new crop coming along in the intensively cultivated rice fields in Hong Kong's New Territories. The plowed land, seedling nursery, young growing rice plants, and the actual harrowing by water buffalo in this picture show all the various stages.

ASIA

hope are centered on the calculating machine and the drawing board. For the last ten years Hong Kong has lived with just such a problem as this. Relief, then jobs, then homes, for perhaps as many as a million people who were not here when the British rule was re-established.

"It is perhaps not too much to say that the people of Hong Kong have pledged a portion of their own future for the benefit of strangers who took refuge here—and sometimes it almost looks as if they are also required to pay interest on the pledge at compound rates.

"It would not be out of place to ask whether there is any country in the world which has faced up alone to problems of this nature and yet, in the first week of March, 1957, a HK$112 million reservoir was opened. During 1957 and 1958 work on the colony's $110 million airport will be completed and work on a $54 million hospital will be started. All these, combined with a balanced budget and direct taxation kept down to 12½%, seem to present an impossible picture —but there it is."

■

TAIWAN . . . . . .

Expansion Program Will Boost 1957 Production

Population: **10,238,080;** ***Per capita paper consumption:*** **14.2 lbs.**
Paper mills: **50; Bagasse pulp mill 1, Bamboo pulp mill, 1.**

Production (short tons)	***1955***	***1956***
Paper (incl. board)	**56,791**	**67,594**
Bagasse & other pulp	**20,273**	**22,510**
Paper imports	**4,699**	**5,000**
Paper exports (incl. board)	**680**	**700**
Woodpulp imports	**1,138**	**1,200**
Bagasse pulp exports	**4,270**	**5,000**

Principal paper grades made: **Newsprint, kraft, sulfite, paperboard, tissue, cigaret.**
Principal paper imports from: **Sweden, U.S.A., Canada, Japan.**
Principal woodpulp imports from: **Canada, Sweden.**
Principal paper exports to: **Korea, Hongkong.**
Principal bagasse pulp exports: **Japan.**

—Taipei

Several projects for further expansion of Taiwan's growing pulp and paper industry were finished too late to have much effect on 1956 production. By the end of 1957 they should result in an increase of about 20,000 to 25,000 tons.

Two new mills are Chutai Paper Mill and Longlived Paper Mill. Longlived Paper Mill has a modern paper machine with 7,200 tons per year capacity.

Taiwan Pulp & Paper Corp., with financial help from the U.S., has an extensive modernization and expansion program under way. TPPC has three paper mills, a board mill and a pulp mill.

TAIWAN—PAPER PRODUCTION
(in short tons)

	Paper	*Board*
1947	9,761	4,388
1950	15,296	3,879
1951	18,038	5,511
1952	28,503	6,291
1953	31,829	6,659
1954	39,270	8,334
1955	45,142	11,649
1956	56,493	11,101

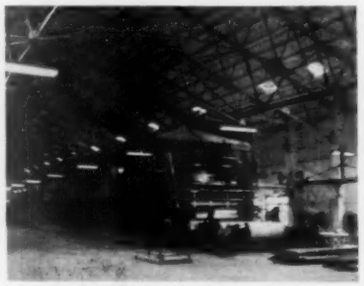
BY NI-HUNG CHANG
Chemical Engineer,
Lotung Pulp & Paper Mill

—Lotung

The Lotung Pulp & Paper Mill finished installation of its new 120 in. Fourdrinier newsprint machine in 1956 and began operating it early in 1957. It has a suction couch roll, suction press roll, Rosenblad condensate dryer system, Bird rotary screen, Vickery Dirtecs and Sveen-Pedersen saveall. The machine was built by Ito Iron Works, Japan, with some equipment imported from Sweden. This is the largest paper machine in southeast Asia and was financed by U.S. aid funds.

The Hsinying Pulp Mill is building a neutral sulfite process kraft recovery plant with Combustion Engineering units from the United States. The plant is expected to begin operations this year.

The Longlived Paper Mill is installing a new paper machine and boiler, to begin operating by the end of 1957. Mr. K. T. Lin, formerly manager of Lotung mill, is now manager of the Longlived mill.



Southeast Asia's Largest
Lotung Mill's 120 in. Fourdrinier, for newsprint at 400-900 fpm. Built by Ito Iron Works, Japan, with some Swedish equipment, financed by U.S.A. funds. Auxiliaries include Bird rotary screen, Vickery Dirtecs and Sveen-Pedersen saveall.

L. T. KAN, manager of Taiwan's Lotung Mill, who was in charge of installation of Southeast Asia's largest paper machine.

Dr. H. Y. Chao was elected chairman of Taiwan Paper Industry Assn. and executive director of Taiwan Pulp & Paper Corp. (TPPC). Dr. Chao had been general manager of TPPC.

■

THAILAND . . . . . .

Abundant Forests Waiting For Industry to Grow

Population: **20,300,000.** ***Per capita use of paper:*** **2.2 lbs.** ***Paper mills:*** **2.** ***Bamboo pulp mill:*** **1.**
Paper production: **4,000 tons.**
Bamboo pulp production: **3,000 tons.**

—Bangkok

This land of rolling hills and large forests has one of the largest and most modern airports in southeast Asia, a port that accommodates ocean-going vessels and a modern city, Bangkok, for its capital. Of its 200,148 sq. mi. of area, about 140,000 sq. mi. are forests, teakwood being an important export. Bamboo is abundant.

A bamboo pulp and paper mill at Kanburi, 75 miles west of Bangkok, makes about 3,000 tons a year and is reported to be doubling its size. A mill in Bangkok makes printing papers from waste paper.

A modern highway system is being built with U.S. assistance.

■

SOUTH KOREA . . . . . .

Industry Is Being Expanded; Rag Mill to Make Fine Paper

Population: **21,526,000.** ***Per capita paper consumption:*** **5 lbs.**
Paper production: **10,000 tons**
Paper imports: **40,00 tons**
Pulp imports: **3,000 tons**

—Seoul

A new paper mill is being built at Taigon, about 100 mi. south of Seoul, for the Korean Government Printing Agency. It will make currency bond and other fine papers. It is one of the few projects the Republic of Korea is

tackling independently, without help from the United Korea Relief Agency, U.S.A., or other outside organizations.

Korea now imports $900,000 worth of currency paper and $500,000 worth of cigaret paper annually. The new mill will eliminate this and also provide employment.

Raw materials will be linen, cotton and hemp rags which are now exported to Japan. If necessary some sulfite pulp may be imported for a short time. At present South Korea has only a few, small scale chemical works.

Sandy Hill Iron and Brass Works, Hudson Falls, N.Y., is handling the entire project from mill layout to specifications of equipment and design of machinery. The paper machine is a Sandy Hill New Ideal Fourdrinier.

Mill operators will first work for several months in existing Korean paper mills and then, as part of the International Cooperation Administration education program, will spend several months in U.S.A. fine rag paper mills. Existing mills in Korea have limited production. They are obsolescent and suffered severe damages during the war.

The United Nations Korean Reconstruction Agency (UNKRA) has allocated over $1,300,000 for the rehabilitation and development of newsprint, bond and kraft paper production. Equipment has been ordered and installation is under way.

■

CEYLON . . . . . .

Island Gets First Mill Using Paddy Straw, Grass

Population: 8,000,000 *Per capita paper consumption:* 5 lbs.
Paper and board mills: 1
Straw or vegetable fiber pulp mills: 1

Production (short tons)	*1955*	*1956*
Paper	0	220
Paper imports	19,800	19,800
Woodpulp imports	0	1,100

Principal paper grades made: Kraft, printing and writing.
Principal pulp imports from: Canada, Scandinavia, New Zealand

—Colombo

The Eastern Paper Mills was organized and begun by the government of Ceylon in 1948, and was turned over to a government body, Easter Paper Mills Corp., Palm Court, No. 10, Albert Crescent, Colombo 7, in 1955. Erection of the mill, which has planned capacity of 4,125 tons per year, was completed by Sept. 1956. Test production was started at that time, under the supervision of Otto Jaeger, pulp and paper engineer. MF glazed kraft wrapping, writing and printing paper were produced from foreign woodpulp with excellent results. It is planned to start commercial production this summer, to provide about one-third of the island's total paper requirements.

Ceylon's First Paper Mill

The government-owned Eastern Paper Mills at Valaichchenai, Ceylon, began test production runs last fall, and is beginning commercial production this summer.

The pulp mill has a designed capacity of about 3,000 tons and will use paddy straw and illuk grass (Imperatta arundinacia) as raw materials, to be pulped by the monosulfite process. Grass and straw are harvested twice each year. As the components of grass and straw, as well as its fiber lengths, are different between summer and winter harvesting, with the latter being relatively short, some grades of paper need addition of longer woodpulp fiber up to 30% in stock preparation. Illuk grass is a rapid growing weed about 3 ft. high. About 44,000 tons can be reaped within a circle of 75 miles.

There is a possibility of duplicate pulp and paper mills being built. No suitable kind of wood fiber has been found in the island.

Pulp so produced undergoes an operation of screening and washing which is very rudimentary, supplying paper of not very good quality, such as brown paper for wrapping and toilet paper. Daily output is 10,000 sheets or approximately 660 lbs.

The labor force consists of 52 workers, men and women, who know their jobs well. The paper is sold locally and is never likely to be exported. Most of the paper made here is little by little losing ground to imported paper of better quality and moderate price.

■

CAMBODIA . . . . . .

Has One Primitive Mill; Imports Are Rising

Population: 4,073,967 *Per capita paper consumption:* 3.4 lbs.
Paper mills: 1

Production (short tons)	*1955*	*1956*
Paper	132	110
Paper and board imports	2,653	6,587

Principal paper imports from: France, Hong Kong, South Viet Nam, Japan.

BY BOU-THOL
Director, Service of Mines

—Phnom-Penh

Cambodia has only one paper mill, using a pulping machine of Cambodian make, with 11 hp drive. Raw materials are straw, waste paper, vegetable fibers, bamboo and chemicals bought locally. The production process is primitive and has not been modernized. Work is done almost exclusively by hand.

■

BURMA . . . . . .

Political Parties Debate Progress on Bamboo Mill

Population: 20,000,000. *Per capita use of paper:* 1.5 lbs.

	1955	*1956*
Paper imports (short tons)	18,205	20,814

Principal paper imports from: Great Britain

—Rangoon

For the past few years a project to build a 100 ton per day bamboo pulp and paper mill near the seaport of Akyab, Burma, has been hanging fire. The stumbling block is raising the necessary capital. The Burmese government has applied to the U.S. government for funds but without success. Ironically, several years ago the U.S. government offered to finance such a project but was turned down.

Other efforts to raise the money, including advertising through U.S. Dept. of Commerce bulletins, have

been unsuccessful. Approximately $15 million is needed for purchase and installation of machinery. An additional $5 million in local currency for construction, labor and other costs would be supplied by the Burmese government. According to Albert Hattis of Robert E. Hattis Engineers, Inc., Chicago, Ill., this situation could change at any moment, particularly if the present government were replaced by a new one. The Hattis firm has made plans for development of the project and supplied a model of the mill which the party in power in Burma has transported around the country, to demonstrate the industrialization to take place under its regime. The opposition party has raised the point that there has been much talk but no action.

■

REST OF MIDDLE EAST . . .

Paper Industry Is Still Small, Consumption Remains Very Low

Population:

Iran	18,944,821
Iraq	5,200,000
Jordan	1,402,800
Lebanon	1,425,000
Saudi Arabia	7,000,000
Syria	3,906,000

Per capita paper consumption: 1 to 4 lbs.
Paper production: 10,000 tons.

—Amman, Jordan

In spite of troubled conditions in the Middle East, H. W. Farhan, Minister of National Economy in Jordan, found time to provide PULP & PAPER with information about his country. No pulp and paper is produced in Jordan but paper imports in 1956 were 2,571 tons, compared with 2,844 tons in 1955, indicating per capita consumption of 3.7 lbs. Principal paper imports are from Sweden, Norway and Austria.

—Teheran, Iran

Riza Roznan of the Ministry of Industry and Mines, Teheran, reports that Iran has six paperboard mills with a total production in 1956 of 2,866 tons. Paper and paperboard imports last year amounted to 18,040 tons, giving a per capita consumption of 2.2 lbs.

—Damascus, Syria

A group of West German paper experts visited Syria recently. They are investigating prospects for a mill producing paper from cotton waste, at the request of the Syrian government.

■

REST OF ASIA . . . . . .

Lots of Rice, Livestock But Not Much Paper

Population:

Afghanistan	12,000,000
Laos	1,300,000
Malayan Fed.	5,750,000
Mongolia	1,000,000
Nepal	8,431,547
Vietnam	22,614,000

Per capita paper consumption: 1 to 2 lbs.

From the fat-tailed sheep of Afghanistan to the rice of Vietnam, agricultural products are the major source of livelihood in the remaining countries of Asia. Malaya exports rubber and tin, Mongolia has its shoe factories, but with few exceptions these countries are undeveloped industrially. Whatever paper industry exists is small and primitive. Nepal recently became a constitutional monarchy, opened its first motor road from Katmandu to the outside world in 1953, and may soon try to use its rich forest resources. For the most part, it will be a while before these countries have an industry for PULP & PAPER to report.

CUSTOM-MADE for you...

ANOTHER REASON . . . You can't beat HAMILTON Felts

If, even tennis players, now think it necessary to have their rackets "Custom-made"—it's more important that all your felts be especially made by us for your machines and engineered for no sag, no stretch fit. Yes, Hamilton Felts are pre-shrunk, "broken-in" for the machines on which you intend to use them. This saves costly downtime, gives you operational savings, makes for more uniformity of your paper or board. There are many other reasons for standardizing on Hamilton Felts. Your Hamilton Felt Service Salesmen will be happy to explain them.

HAM FELTZ says:

"We can supply a Hamilton Felt of standard construction for more than 300 proven styles . . . or design a variation to solve your specific problem."

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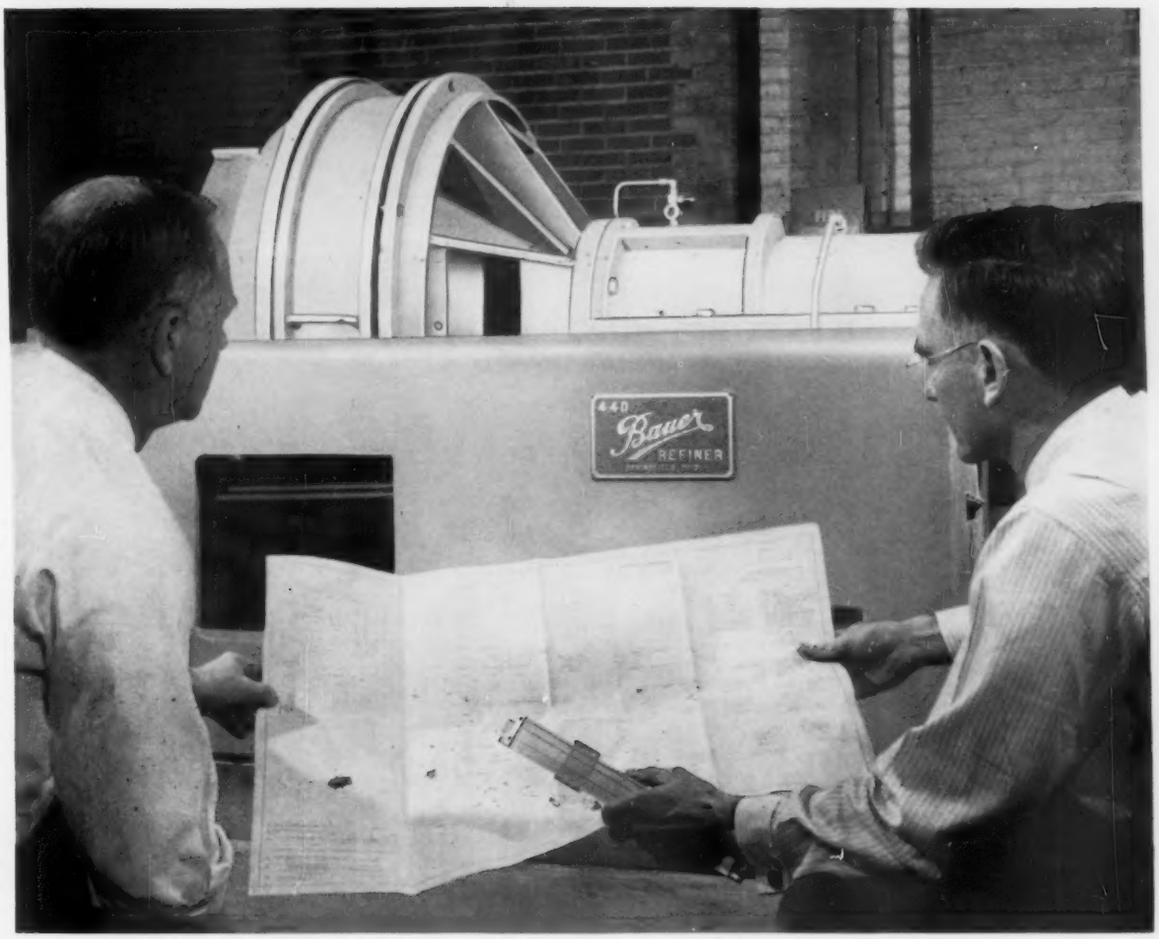

Bauer Pump-Through Refiner Improves Quality and Lowers Costs...

HELPS MILL WIN BATTLE OF SURVIVAL

Our report No. 1056 explains how this refiner kept a mill in competition after a forced change to a new raw material caused serious production problems. Formerly using easy-beating straw in the manufacture of nine point corrugating medium, the mill switched to waste paper and found their jordans inadequate for the new refining requirements. A Bauer Pump-Through Refiner, installed after the jordans, improved end product quality at reduced costs and helped keep this mill in business.

The Bauer Pump-Through Refiner does an outstanding job of fiber separation, hydration and freeness control in stock preparation. It produces uniform, reproducible quality sheet with high mullen and tear values. Efficiency, low horsepower requirements and rugged design mean big savings in operating costs, labor and maintenance.

These modern refiners can supplement your present jordan capacity or replace jordans completely. Available in two sizes, they are used in producing liner board, bag paper, corrugating medium, cotton linter products, fine papers, tissues, newsprint and in other semi-chemical and kraft applications. Automatic controls and a wide variety of plates tailor-fit them to your needs.

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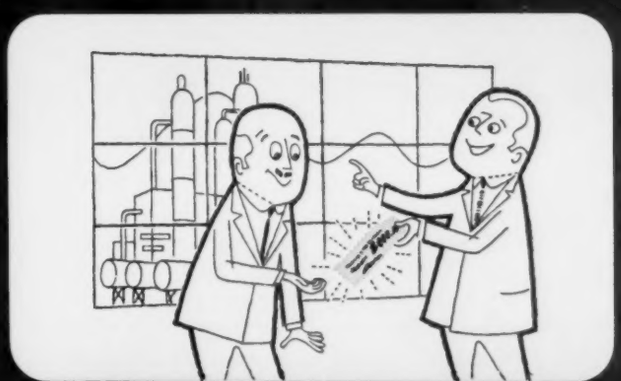
You may decide on a *lump sum* (turnkey) contract, where final cost can be fixed before work starts.



You may want Lummus to build on a *guaranteed maximum* contract. Any savings are then shared with you on a pre-arranged basis.

Or maybe you prefer a *cost-plus* arrangement. Your auditors and directors will cheer Lummus' astute purchasing.

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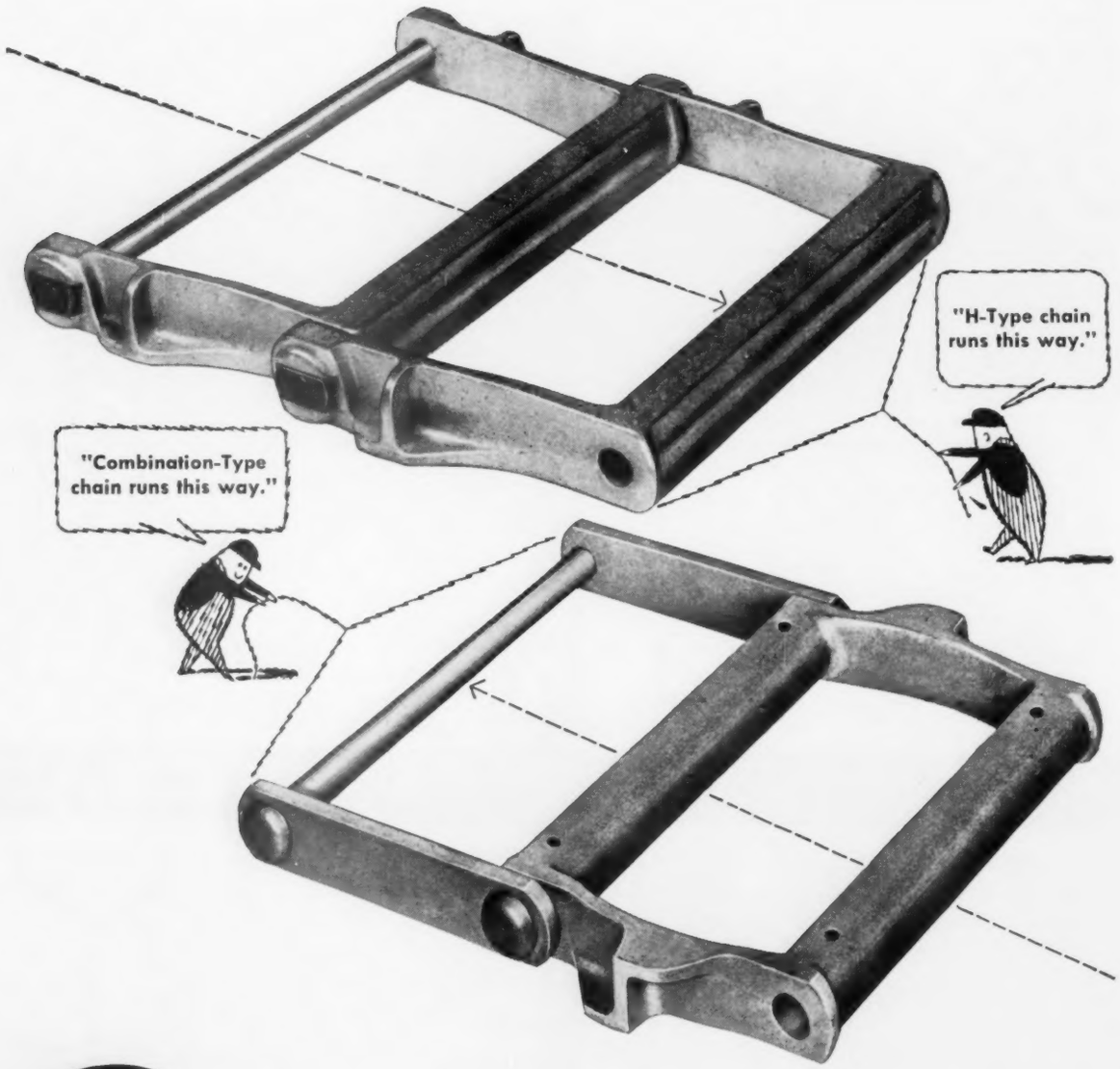


REX® Mill Chains...take your choice

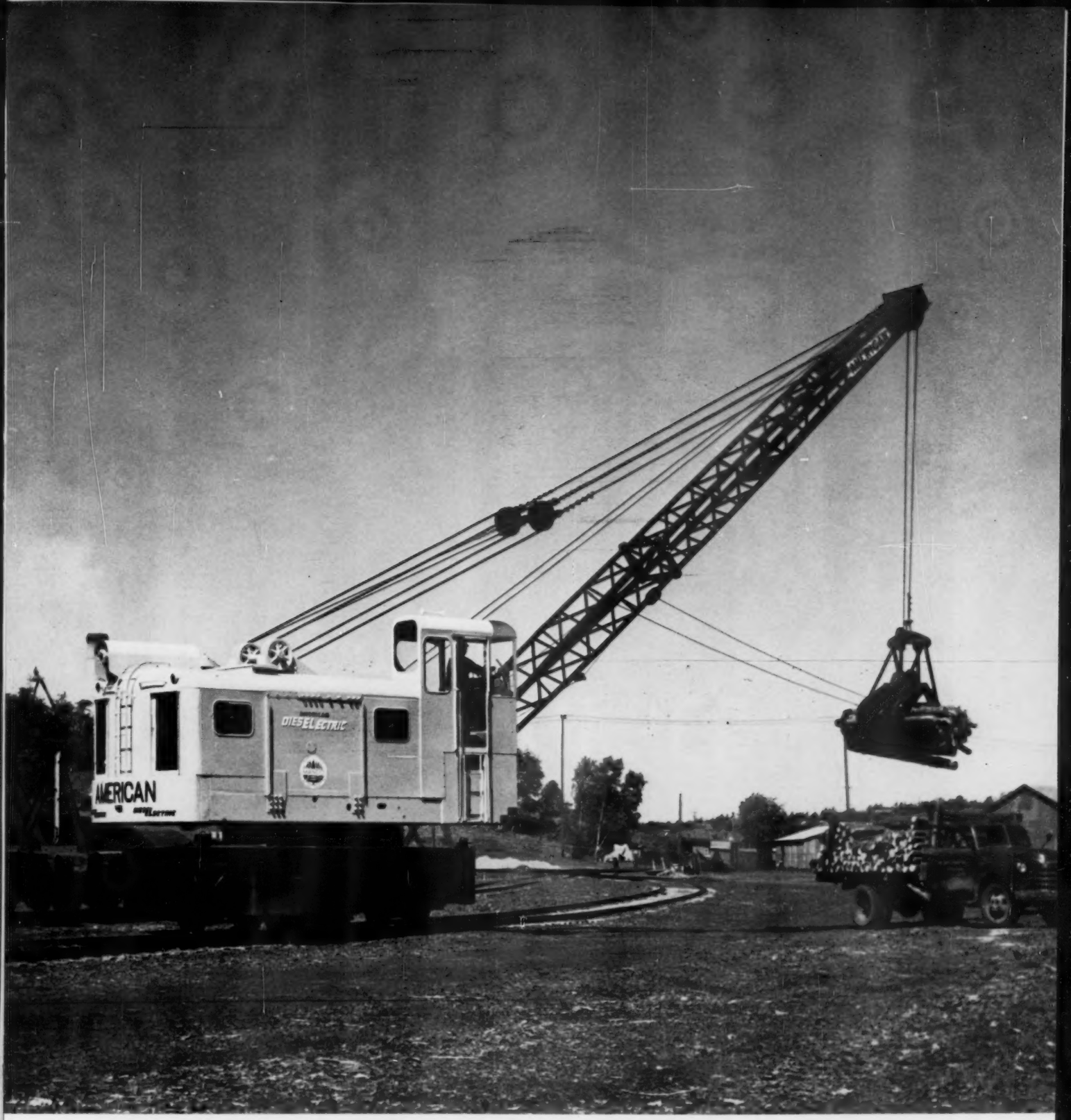
Take your choice between two types of Rex Conveyor Chain—each a proved performer in pulp mill service. They move refuse and other mill materials, and operate over the same sprockets and in the same trough. Because of their width (up to 16 inches), they provide great capacity at slow speed.

Rex H-Type Mill Conveyor Chain is the Old Faithful of the industry, and you may wonder why there is also Rex Combination-Type Mill Conveyor Chain. It's because we have learned to make a chain that we think is a little better than the very good H-Type. Combination-Type has larger diameter rivets, steel strap connecting links and securely locked pins. This means less corrosion fatigue, higher working loads and ultimate strengths—plus the ability to weld attachments to the connecting link. Combination-Type is the chain for today's operating requirements.

H-Type or Combination-Type—take your choice. You'll have a chain that will live long and do your job as it should be done. For all conveyor and drive chains for mill service, see your CHAIN Belt Distributor. CHAIN Belt Company, 4691 West Greenfield Ave., Milwaukee 1, Wisconsin.

CHAIN BELT COMPANY

Milwaukee 1, Wisconsin



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*U. S. Patent No. 2083460

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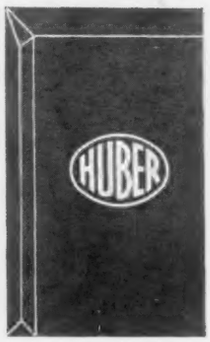
A spray-dried, low-viscosity, high-brightness, fine-particle, Georgia coating grade, in bead form, with the dispersant already added. Saves "make down" time and assures thorough dispersion in practically any equipment.

Quality Clays for the Paper Industry



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A fine-particle Georgia coating clay of low viscosity and high brightness particularly well adapted to high solids coating. It is available in either lump or pulverized form.

HYDRATEX

A Georgia coating grade of medium particle size distribution and price. Quality controlled throughout. Lump or pulverized.

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A Georgia water-washed filler of high, dependable brightness. Available in lump form where this type is preferred over the fluffier airfloated fillers. Also available pulverized.

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A Georgia water-washed filler of same general type as SWW but with a slightly coarser particle size distribution which in some mills permits higher solids slurrying. It is available as lump or pulverized.

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Many important innovations have resulted from Huber's understanding of the paper industry's needs. Among these is our patented Viscontrol® process which assures you of maximum uniformity in the flow characteristics of our coating clays.

Palletizing, the de-airing and reshaping of shipping bags—another Huber first—save you 25 percent in shipping and storage space—and provide easier handling of the bags.

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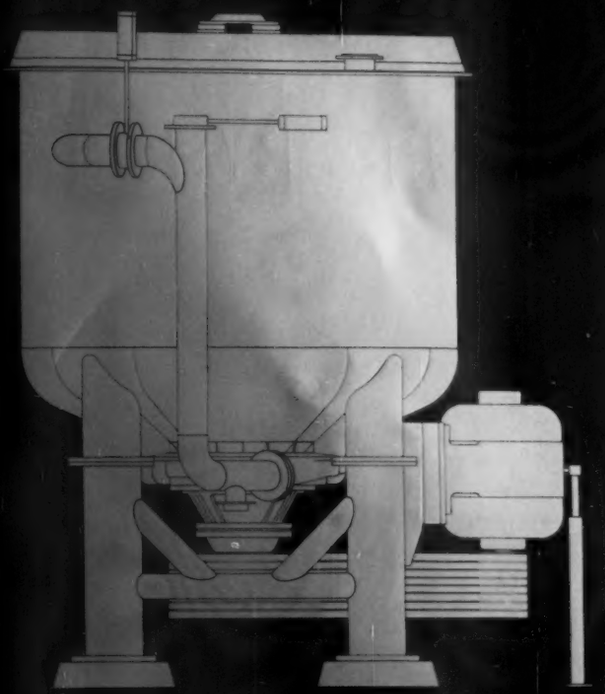

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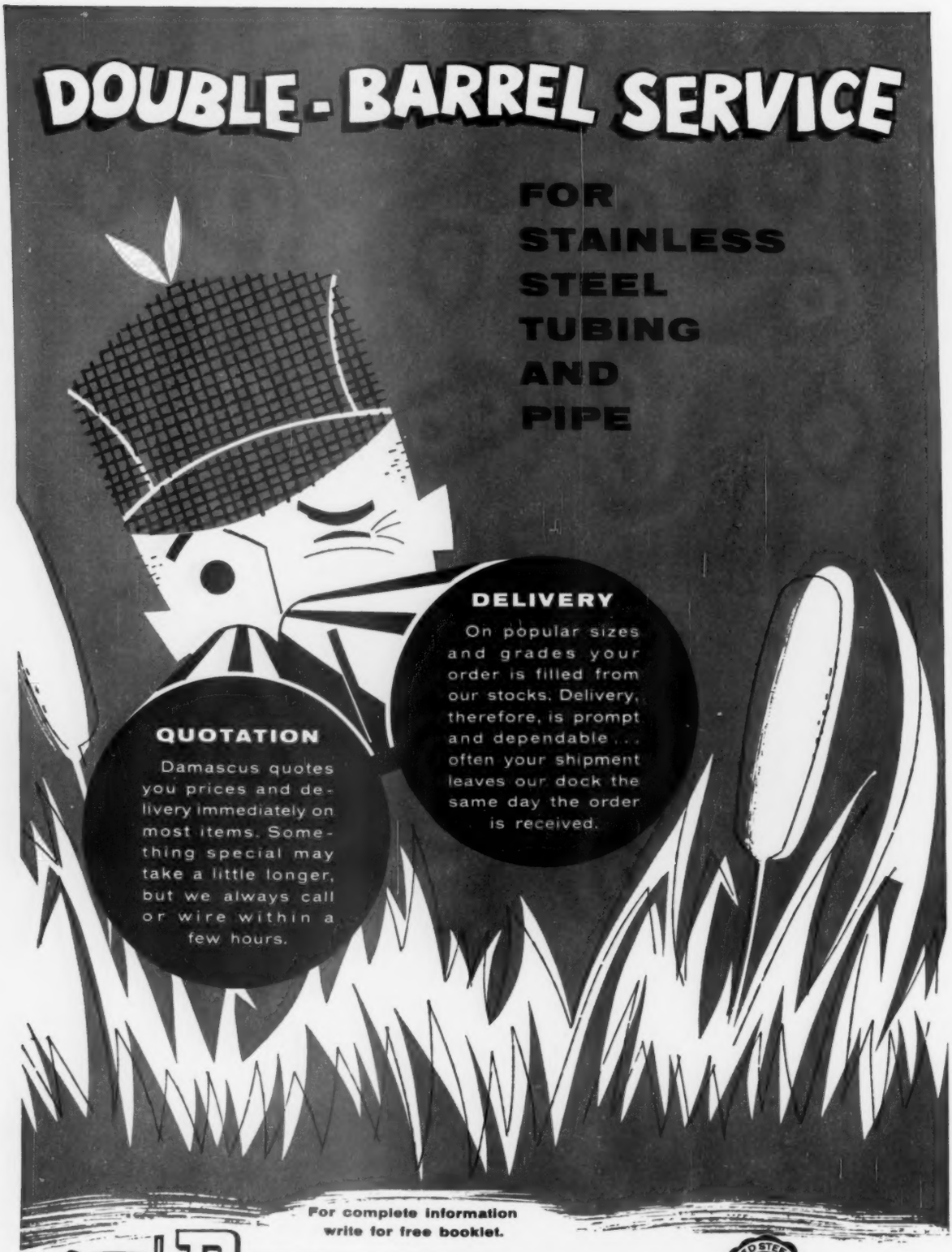

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Carding, spinning, weaving and the like are accepted processes of the felt-maker. In a larger sense, however, the success of each TENAX FELT depends not only on plants, machinery, the skill and efforts of our workers, but also on the design, technique and engineering embodied in the felt. Broad knowledge of chemistry, paper, textiles attained in many Alma Maters . . . coupled with the kind of experience available only in the actual production of paper and board . . . are **musts** in sound felt-making. Those basics are here . . . in every department at Lockport Felt.

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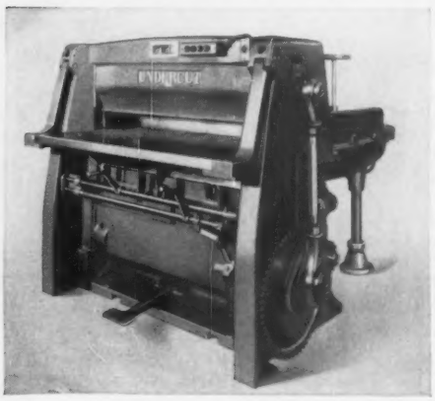
Headquarters For Cutting Equipment

NEWS LETTER

Automatic Back Gauge on "Undercut" Paper Cutters



A new, exclusive, patented method of control guarantees exact positioning of the back gauge for utmost accuracy in cutting. Can be attached to existing machines in minutes!

"Undercuts" are available from 56 inch to 96 inch widths. Especially designed for the "tough" jobs, such as: cutting leatherboard, asbestos, heavy cardboard, etc.

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If it is printed—on paper, foil or board, then you can cut it to exact register on our high speed rotary spot cutters. Custom-built to fit YOUR press—or designed to operate as individual units.

Maximum cutter speeds to meet your requirements.

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Smith & Winchester bag machines consist of separate tubers and bottomers designed for the multi-wall bag industry. Tubers are designed for one to six-wall flat tubes for satchel bottoms or for gusseted tubes for sewn valve bags. All sizes of these machines are available. Paper speeds are guaranteed as required. Write S & W direct for complete information, giving style and dimensions of tubes required.

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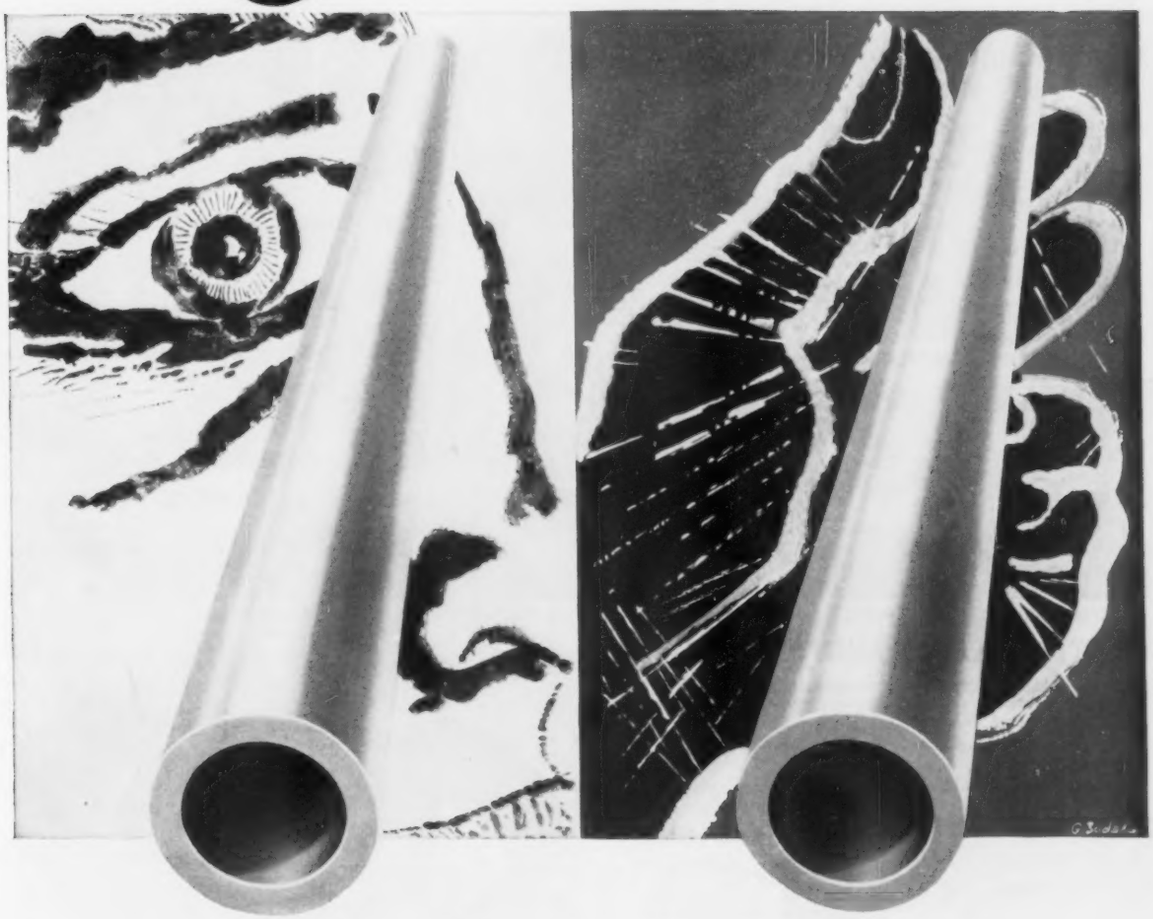

Look alike... Feel alike
BUT AS DIFFERENT AS DAY AND NIGHT

It's a fact: Given the same raw materials, finished plastic pipe can be as different as day and night. The difference is in the techniques of compounding and manufacture.

For instance, these two lengths of plastic pipe, when new, have the same appearance, the same "feel", even the same weight. Both are used to carry the same corrosive chemicals. Yet one pipe failed in just a few months—the other pipe still shows no sign of wear after several years of service.

What's the difference? The *long-life* plastic pipe (on the right) is Uscolite®, and that means *quality*—the use of undiluted virgin resins, superior extrusion techniques, precision dimensions, quality control all the way.

When you order Uscolite—either Uscolite CP (modified alloy) or Uscolite RV (polyvinyl chloride)—you're getting plastic pipe with a reputation that has been proven by 8 years of service. And in all that time, *not one foot of Uscolite Pipe has ever been replaced.*

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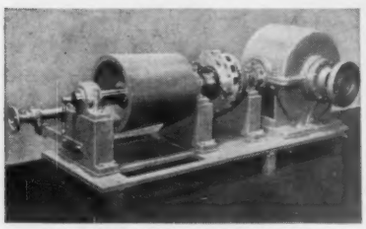
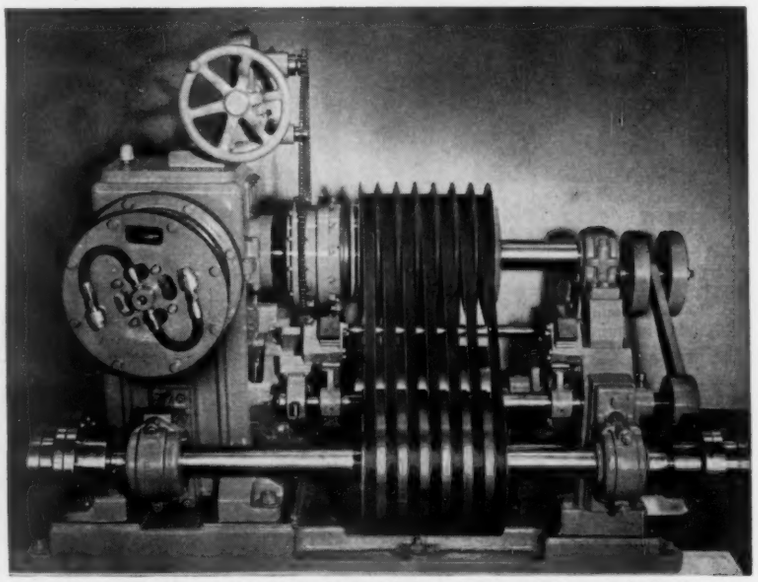
Spiral Bevel Cone Pulley Drive—cuts down vibration, noise. Air-operated clutch assures smooth, trouble-free engagement and disengagement. Pulley permits more accurate regulation of draws, lengthens belt life.

SYCO Drive—synchronizes sectional speeds, preserves uniform tension on sheet. Saves up to 50% usable floor space.

VERSI Drive—positive power transmission, precision draw control to driven machine section. Compact, accessible, instantly controlled. Eliminates stoppages and down-time.



SPIRAL BEVEL GEAR DRIVE



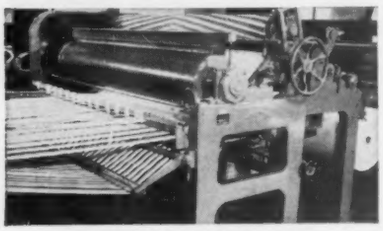
Moore & White VERSI DRIVE® available in 3 sizes, practically all speeds.

• SLITTER BLADES AND ASSEMBLIES

Split V-lock double-edge bottom blades (shown at right) change in minutes without pulling bearings and hubs. Greatest time-saving boon.

Anti-friction bearing top slitters, *quick*-movable type, last longer.

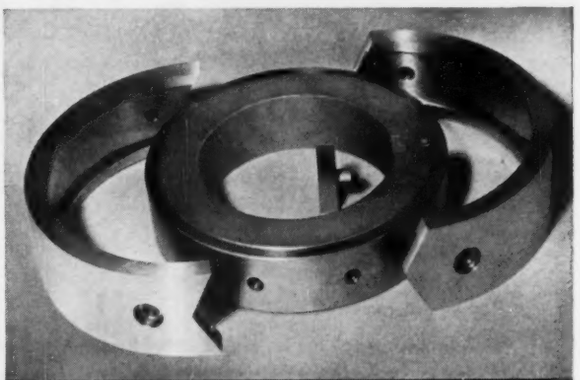
Conventional assemblies and air-operated Duplex Slitters.



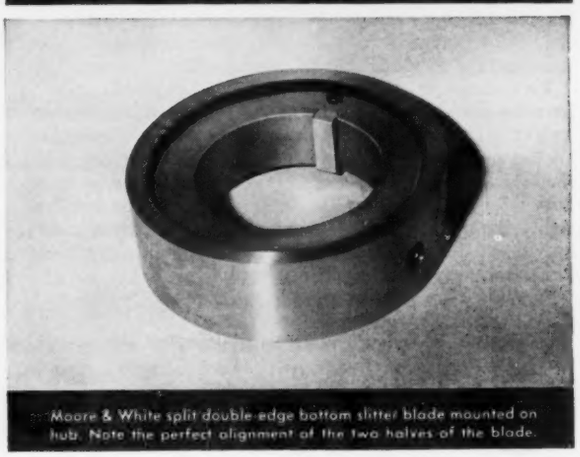
SIMPLEX SHEET CUTTER

Rotary Sheet Cutters

Simplex, Duplex and Triplex. Cut within trade - custom accuracy. M&W stamina for 24-hour continuous operation.



The secret of perfect alignment is in the V-lock joint and the method of mounting the precision-ground blade on the hub.



Moore & White split double-edge bottom slitter blade mounted on hub. Note the perfect alignment of the two halves of the blade.

• SAMPLING DEVICES

For paper, plastic, metal, textile and other industries.

M&W PAPER SAMPLER minimizes risk of costly web breakage.

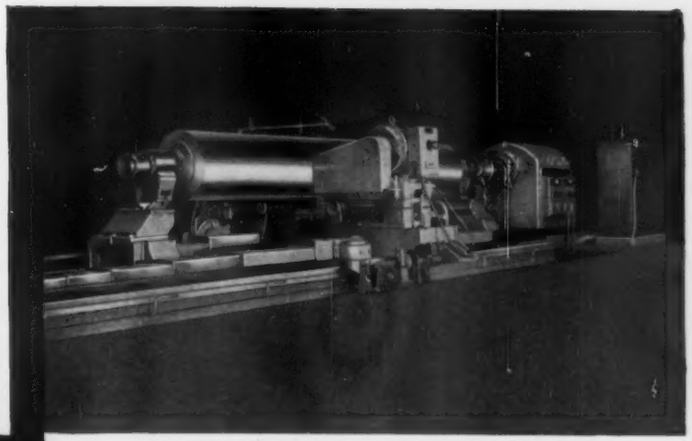
- AUTOMATIC LAYBOYS—Simplex and Duplex.
- BACKSTANDS—1 to 30 rolls.
- FRICTION CLUTCHES—Standard and Hi-Speed. Air operated.
- GUIDES—Automatic Felt and Wire Guides. Hand guides.
- LOG SPLITTERS — 2-way and 4-way. Rugged.
- PAPER MACHINE SECTIONS—Wet end cylinder and Fourdrinier. Straight, reverse or size presses. Deck and stack dryers. Upright, revolving and Pope reels. 2-drum and 4-drum winders.
- ROLL GRINDING—up to 36" d. x 21' over-all length.
- CUSTOM-BUILT EQUIPMENT—to suit your installation by long-time specialists in the field.

The MOORE & WHITE Company

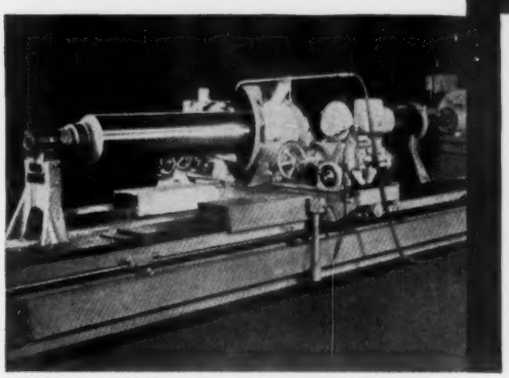
330 East Hunting Park Avenue, Phila. 24, Pa.

West Coast: **Stephen Thurlow Co., 3701 W. Alaska St., Seattle 16, Wash.**

LARGE OR SMALL...



Here is one of LOBDELL's latest Type CW, 48" Roll Grinders . . . capacity from 12" to 50" dia., 324" face . . . with adjustable speed drives.



The new #3 Type GHV, 36" capacity LOBDELL Roll Grinder . . . designed especially for the small mill . . . provides a new high in simplicity of control and maintenance.

LOBDELL

roll grinders *for every purpose* . . .

Rugged, extremely accurate, with ease and flexibility of operation; in full range of sizes for all mill requirements. Three basic sizes designated for alternating current drives, varying in sizes according to roll diameter, length and weight; two larger sizes designated for direct current drives; and for maximum roll diameters of 48" or 60", weighing 40 or more tons. Write for detailed information.

- CHILLED IRON ROLLS
- MACHINE CALENDAR STACKS
- ROLL GRINDING MACHINES
- ROLL CALIPERS
- KNIFE GRINDERS
- ABRASIVE CUT-OFF SAWS

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LATIN AMERICA

New Processes Spur to Growth

■

MEXICO . . . . . .

Newsprint and Bleached Pulp Are New Products

Population: **32,000,000.** ***Per capita paper consumption:*** **26 lbs.**
Paper and board mills: **34.** ***Pulp mills: chemical wood, 4; groundwood, 6; straw or other fiber, 4***

Production (in short tons)	*1955*	*1956*
Paper and paperboard	274,000	346,000
Chemical woodpulp	100,000	120,000
Groundwood	35,000	29,000
Straw, other fiber	13,000	25,000
Imports—paper, board	27,000	17,000
Imports—woodpulp	46,000	39,000

Principal paper grades made: **Kraft and sulfite papers, book and writing, board, tissues, fine papers**
Principal paper imports from: **U.S.A., Canada**
Principal pulp imports from: **U.S.A., Sweden, Finland, Canada**

—Mexico City

Many millions are being invested in new or expanded pulp and paper mills in Mexico. There has been a boom in tissue grades, with Scott and Kimberly-Clark of U.S.A. entering the field, also in bleached pulps and newsprint, both of which are new products for Mexico.

One mill is well on the way to make newsprint and other newsprint machines are reported planned. Pulp and paper manufacturers, in the old Mexican revolutionary days, had dodged from newsprint like a plague, because political pressures made it often far from lucrative. Times are changing. All kinds of industries are rising in Mexico now.

The Department of National Economy predicts self-sufficiency for Mexico in cellulose pulps. It is making headway in that direction.

Sponsored by local banking interests, the Mexican Institute of Technological Investigations has a training program in pulp and paper for 30 students a year and also has a cellulose research division testing tropical trees for pulp. Also, United States companies which have entered the Mexican industry are taking young Mexicans to the States for training courses.

By CARLOS GARCIA ROBLES

Pulp and Paper Mill Engineer

—Mexico City

There again has been a considerable rise in 1956 in pulp and paper production and consumption in Mexico. Four new mills started operations within the year with as many new paper machines. Four already established companies also installed new machines.

The General Board of Statistics in Mexico reports that seven of 12 leading industries, including pulp and paper, are working at 100% capacity.

According to economical studies made by Banco Nacional de Comercio Exterior S.A., from 1954 to the middle of 1956 some 575 million pesos ($46,000,000) has been invested in pulp and paper expansion (by seven companies).

Adamas S. A.—This company headed by Dr. Gastón Sonino started making condenser and insulating paper and special boards in Sept. 1955, 14 months after construction started. The site is 15 miles northwest of Mexico City. The mill has its own medical service, theatre, lecture room and many other facilities for its employes and workmen. Top officials have been trained in mills owned by the parent company in Italy, Argentine, Brazil and France.

La Aurora S. A. de C.V.—The above concern under part ownership of Kimberly-Clark Corp. started its new tissue machine on the second half of the year, the old plant at Fernando

Unusual Picture of Mexican Paper Company Executives

Some ten different Mexican firms are represented in this picture by presidents or mill or sales managers. PULP & PAPER is indebted to ANTONIO M. DAVILA (extreme left), president of Fabrica de Papeles Faciales y Sanitarios S.A., for use of the picture. This company built Mexico's first tissue mill in 1947, visited shortly after by PULP & PAPER's editor.

Left to right: Mr. DAVILA; PEDRO MIER, manager, Fabrica de Papel Coyoacan, S.A.; JUAN BADIA, manager, Negociacion Papelera Mexicana S.A.; AGUSTIN TOUSSAINT, sales mgr., Cartonera Moderna S.A.; JOSE CARLOS DE LA MACORRA, assistant manager, Papelera y Cartonera Los Reyes S.A.; PAULINO ORTIZ, manager, Fabrica de Paper Coyoacan S.A.; BEN SHELDON, International Corp.; ANGEL ROMANOS, manager, Papelera Chabacano S.A.; RICARDO GOMEZ, manager, Papelera El Fenix S.A.; JOE D. FERRY, sales mgr., Sonoco de Mexico S.A.; FELIX RIBOT JR., production mgr., Cartonera Moderna S.A.; ARTHUR NICOL, International Corp. rep., and JOHN HAYS, manager, Fabrica de Papeles Faciales y Sanitarios S.A.

de Alva Ixtlixochitl continues operations. Phil Bachelder (now returned to U.S.) was gen. mgr. for K-C, Peter Heintzkill is mgr. of the new mill, and Frank Woolridge is sales mgr.

Cartonajes Estrella S.A.—Under the management of Amable Carriles this company, is contemplating further expansions of its board mill. Machine No. 1 trimming 76 in. is being improved with the addition of two more vats and 24 more dryers, a Ross air system and a Ross Midwest Fulton dryer drainage system. Plans for another 136 in. board machine are under way.

Papelera Iruña S.A.—This company owned by the Arcelus Brothers and managed by Carlos Arcelus and Lorenzo Arcelus in charge of production, made a lot of improvements at its three-machine mill in the southeast of Mexico City; a Hi-Lo Jones Pulper, 8 in. Vortrap, 4 Jones refiners and 4 new tiled stock chests were added to the stock preparation system of machine No. 3. Also a new 250 hp boiler and a German steam engine of new design coupled to a generator will generate part of the power requirements.

Fabrica de Papel San Jose S.A.—This company headed by Pedro Candás, an old employe of Coyoacan Paper Co., started operations on the second half of the year, making for the time being wrapping papers but planning to ultimately produce glassine and greaseproof papers.

Negociacion Papelera Mexicana S.A.—This family-owned paper and board mill, under managership of Eduardo Olmedo and Juan Badía, has purchased a 108 in. wire Fourdrinier machine. Work on this installation was initiated in Dec. 1956 and production is planned for the second half of the current year. A 400 hp, 475 psi Combustion Engineering boiler and a 1125 kva Sulzer turbogenerator are also being installed.

Fabrica de Papel Mexico S.A.—A new company has been formed by Coyoacan Paper Co. under the above name. It has purchased a 134 in. wire Fourdrinier machine to be erected at a site besides Coyoacan's subsidiary El Pilar bagasse pulp mill. Constructional work was started at the end of 1956 and it is presumed operations will start by the end of 1957.

Papelera y Cartonera Los Reyes S.A.—Rumors have been heard for some time about this company being purchased by Container Corp. of America. Finally this has been confirmed. The U.S.A. subsidiary company, which will take over the entire holdings of the old firm, will operate under the name of Cartón de México S.A.

Papelera Veracruzana S.A.—In 1939 a Fourdrinier paper machine was partially erected at the town of Orizaba about 200 miles from Mexico City. No further effort was made during these years to complete the mill until Enrique Morodo, owner of a well known paper converting plant purchased the entire holdings. Operations were started recently, making bag paper for use in its own converting plant.

Fabrica de Papeles Faciales Y Sanitarios S.A.—This company was originally formed by Antonio Dávila in 1947, being the first tissue mill in this country. Subsequently in 1955 he reorganized his company with the help of American friends. He is now president of the new organization and John Hays is general manager. The new plant started trials at the end of 1956, making tissue and sanitary paper and napkins of facial quality on a 67 in. trim Fourdrinier machine; another 86 in. trim cylinder machine is in the course of erection. With both machines they will be able to produce about 13 tons in 24 hours. Plans are being contemplated for the addition of a 40 ton paper machine for the manufacture of kraft paper for cement bags.

Productora de Papel S.A.—The Garza brothers' mill at Monterrey started its second 80 in. machine in Aug. 1956, being equipped with a German 11 ft. Yankee cylinder and a short center mechanical drive.

Sonoco de Mexico S.A.—This subsidiary of Sonoco Products, Hartsville, S.C., U.S.A., started its second 136 in.

Once a Nunnery—Now a Leading Paper Mill

In Coyoacan, just south of Mexico City, is Coyoacan Paper Co., one of the principal paper mills in Mexico. It has been spreading out with subsidiaries—El Pilar bagasse pulp mill a few years ago; now Fabrica de Papel Mexico S.A., a paper mill alongside El Pilar. A former Coyoacan employe has started another mill—Fabrica de Papel San Jose S.A. This building has 3 ft. thick basalt lava walls, is 250 years old, formerly housed a convent.

MEXICO—PAPER CONSUMED

(in thousands of short tons)

	Printing* (no news)	Writing & Fine	Coarse & Wrap	Tissue	Paper Board	Total (Includes others)
1948	20	23	59	7	47	165
1949	19	27	60	8	49	171
1950	25	32	75	12	54	209
1951	29	36	78	16	57	226
1952	29	33	76	15	63	230
1953	30	35	79	18	68	250
1954	28	38	80	22	71	260
1955	32	45	106	22	92	338
1956	48	64	131	22	97	415

* Mexico imported 36,971 tons of newsprint in 1955; 51,557 tons in 1956.

MEXICO—PAPER PRODUCED

(in thousands of short tons)

	Printing* (no news)	Writing & Fine	Coarse & Wrap	Tissue	Paper Board	Total (Includes others)
1948	17	20	54	4	44	147
1949	18	23	58	5	49	156
1950	22	25	52	4	45	150
1951	27	35	77	13	56	217
1952	25	30	70	2	60	198
1953	26	31	75	0	63	201
1954	23	33	78	2	67	207
1955	31	43	105	3	90	274
1956	46	61	130	4	96	346

* There is no newsprint made in Mexico.

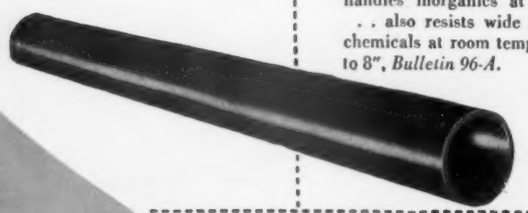
MEXICO—WOODPULP

(in short tons)

	Produced	Imported
1937	18,636	
1946	27,010	
1947	56,314	
1948	78,880	32,933
1949	71,500	45,000
1950	77,000	56,500
1951	94,000	56,000
1952	90,000	60,000
1953	92,000	54,000
1954	96,000	44,000
1955	148,000	46,000
1956	174,000	39,000

FOR HOT CORROSIVES:
ACE TEMPRON

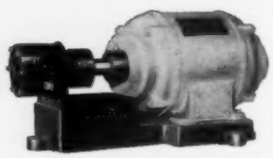
Heat-resistant nitrile hard rubber pipe handles inorganics at 250-275 deg. F. . . also resists wide range of organic chemicals at room temperature. Sizes 1" to 8", *Bulletin 96-A.*



Only the Right piping can deliver a "GOOD RUN"

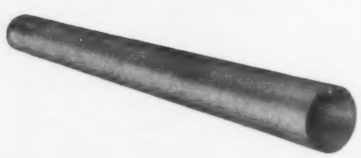
For profitable runs you must keep equipment "on stream" full time with no corrosion shut-downs. Protect your profits with Ace piping, pumps, valves, and tanks. Many rubber and plastic materials . . . backed by a century of chemical experience. Get facts today from American Hard Rubber Company.

MIGHTY MIDGET
for pumping acids



Jabsco neoprene-impeller pump made of Ace hard rubber outlasts, out-pumps anything in its pressure, size and price class. Capacity from 15 gpm. at 22 ft. head to 5 gpm. at 72 ft. head. *Bulletin 97-A.*

SENSITIVE, BUT KEEPS YOUR HEAD



TOUGH ACE-ITE PLASTIC PIPE

General-purpose moderately priced rubber-plastic pipe handles most common chemicals to 170 deg. F. . . . except few strong acids and organic solvents. Tough, odorless, tasteless. Rigid pipe ½" to 6". *Bulletin 80.*

ACE Darling Swing Check Valve . . .

lined with Ace hard rubber for the best in corrosion resistance. Large, straight-through flow areas. Sensitive to slight pressure differential. Non-slamming. Sizes 2" to 24". *Bulletin CE-52.*

ACE processing equipment of rubber and plastics

AMERICAN HARD RUBBER COMPANY
93 WORTH STREET • NEW YORK 13, N. Y.

vat machine in Sept. 1956 making liner and folding box boards; the cylinder moulds as well as several other items were made locally under supervision of J. E. Webb, general manager, and Charles S. Boyers, plant supt.

Fabrica de Papel la Soledad S.A.—Gilberto Madrueño, an old employe of Coyoacan Paper Co., in association with Angel Mier, a cousin of the late Tomás Mier, former Coyoacan president, started their own plant late in 1956 with a 78 in. trim Fourdrinier machine making wrapping paper. The mill is equipped with two 1000 lb. beaters, a Miami jordan and No. 1 E. D. Jones refiner.

Fabrica de Papel Tuxtepec S.A.—Construction work on this mill, which will be the only one in Mexico making newsprint, started late in 1956 and is about 50% completed. It is near Tuxtepec Oaxaca. The urban zone for employes' homes is finished. This mill, which will make about 33,000 tons of newsprint, will start operations in 1958. It will be equipped with 184 in. wire Black-Clawson Fourdrinier machine trimming 170 in. designed for a speed of 500-1500 f.p.m. for a production of 165 tons/24 hours, however they will start with a speed of 1000-1100 f.p.m. for a production of 110 tons/24 hours. The groundwood mill will start with 4 Roberts continuous grinders taking 3500 hp each, with room for another two grinders when the machine top speed is reached. Tuxtepec will utilize about 85% of groundwood made from Ponderosa and Mexican pines, besides other species which have been found suitable, the rest will be made up by

CARLOS GARCIA ROBLES (left), consulting engineer and U.S. equipment representative in Mexico City, writes another interesting report for PULP & PAPER. Graduate of engineering at University of London, he got technical training by working the San Rafael mill seven years. His father was former manager of the El Progreso mill.

JESUS E. ZOMBRANO (right), director general of Empaques de Carton Titan, S.A., subsidiary of Monterrey breweries, second biggest in North America, has ordered a second complete Fourdrinier machine from Sandy Hill Iron & Brass Works of U.S.A.

DR. GASTON SONINO (left), general director of Adamas S.A., making special boards, condensing papers, industrial papers—some products never before made in Mexico. Export to also export to Caribbean countries. Adamas companies are also in Italy, France, South Africa and Argentina.

JUAN BADIA (right), manager of Negociacion Papelera Mexica S.A., in Mexico City outskirts, which is installing another machine and also a 400 hp Combustion Engineering boiler.

semi-bleached kraft pulp from the Chihuahua mill. Electrical power will be taken from the Miguel Alemán Dam in the Papaloapam River, at present under construction. Tuxtepec will consume 15,000-20,000 KVA. This company is headed by George S. Wise, president, and Abraham J. Navas, administrator. Parsons & Whittemore Inc., New York, are engineers.

Cia. Industrial Telaya S.A.—This mill is situated near the village of San Rafael in the state of Veracruz, about 360 miles from Mexico City. It is headed by J. A. Chabrand, president, and Oscar Chabrand, manager. It makes its own alkaline pulp with a mixture of banana stalks and sugar cane bagasse. This mixture is used for the manufacture of about 12 tons of corrugating medium which is very well liked by the corrugated board manufactures because of special characteristics.

There are about 60 small board mills scattered all over the country making sun dried board sheets mainly used for roofing and which apparently make a total of about 40,000 tons annually, which has never been calculated in Mexican paper production.

Other reports of industry progress from Mexico:

Empaques de Carton Titan S.A.—This board mill, subsidiary of second biggest brewery in North America in Monterrey (next to Anheuser-Busch) is putting in its second Sandy Hill Iron & Brass Works (Hudson, N.Y., U.S.A.) complete Fourdrinier machine within five years. Jesus E. Zambrano is director general of the board mill (he has two children in school in New York state). This company is very progressive and carries on extensive costly research in raw materials such as bamboo, bagasse, etc., for its board pulp. L. G. (Jerry) Brockelsby of Sandy Hill says there are many new industrial projects under way in Monterrey.

Celulosa de Chihuahua S.A.—This $30,000,000 kraft pulp mill in western Chihuahua, built by an Italian firm, is being successfully operated now for market paper pulps by Kimberly-Clark Corp. for 6% of profits with 20% stock options. Under contract with the parent Chihuahua Industrial Group, Kimberly-Clark operates and manages 400,000 hectares of mountain timberlands, pulp mill, plywood plant, box factory and seven sawmills for 6% of profits and option on 20% of stock.

Industrial San Cristobal S.A.—Ownership shared by Scott Paper Co. and Dr. Dante Sandro Cusi, with Dr. Roy L. Davis, former Scott plant manager in Detroit, as executive vice president. Dr. Cusi notes that Mexico is making the first bleached cellulose in its history this year by his and other firms.

Fabricas de Papel Loreta y Pena Pobre—At Pena Pobre, this company headed by the Lenz brothers has installed a $1,520,000 cellulose bleach plant in connection with its kraft mill.

■

ARGENTINA . . . . . .

Political Events Have Hampered Industry But Future Is Bright

Population: 19,500,000. *Per capita paper consumption:* 43 lbs.
Paper mills: 64; *Woodpulp mills:* 3; *Straw mills:* 3

Production (short tons)	*1955*	*1956*
Paper	305,538	289,332
Chemical woodpulp	55,000	53,000
Mechanical woodpulp	33,000	30,000
Paper imports	135,587	123,321
Woodpulp imports	222,588	143,695

Principal paper imports from: Finland, Sweden, Norway
Principal woodpulp imports from: Sweden, Finland, U.S.A.

BY JULIO CESAR LERA

Vice President, Francisco Lera, S.A.

—Buenos Aires

In order to understand the paper situation, one must bear in mind recent political events in Argentina. Toward the end of 1955, the Peron government was deposed by the Revolution of Liberation. This was welcomed by most Argentines, as liberties had been restricted more and more.

UMBERTO POMILIO, creator of continuous caustic soda pulping—bleaching process used for cane bagasse, introduced in Celulosa Argentina mill. Now used in Mexico, India, Philippines, Taiwan and other countries.

Paper and board production and consumption in 1956 show some changes, but not of the kind and degree that all Argentines would have wished. It is quite natural that the Revolution of Liberation should be unable to solve all the economic problems of the nation quickly, after 12 years of Peron rule.

Prospects for the future are optimistic. Argentina is a very rich country, whose economy will gradually recover. This will bring prosperity and initiative in private enterprise. Newspapers will publish anything they wish, without any restriction. Consequently an increase in consumption of newsprint seems inevitable in the coming years. Argentina is bound to achieve soon the same level of importation in this line as existed before the deposition of Peron.

During 1956 the number of paper and board mills in Argentina grew from 49 to 64. Although production

ARGENTINA—PAPER AND BOARD

(in short tons)

	Imports	*Production*	*Total*
1949	240,836	195,565	436,401
1950	211,949	232,548	444,497
1952	178,509	220,006	398,515
1953	37,025	191,925	228,950
1954	70,770	251,511	322,281
1955	135,587	305,538	441,125
1956	123,321	289,332	412,653

ARGENTINA—WOODPULP

(in short tons)

	Imports	*Production*	*Total*
1949	76,519	38,191	114,710
1951	141,622	45,295	186,917
1952	94,979	41,628	136,607
1953	39,173	43,390	82,563
1954	186,797	58,230	245,028
1955	222,588	88,000	310,588
1956	143,695	88,000	231,695

ARGENTINA—NEWSPRINT IMPORTS

(in short tons)

1949	112,012
1950	104,621
1951	117,082
1952	95,484
1953	30,776
1954	54,241
1955	92,030
1956	90,000

LATIN AMERICA

figures are slightly lower than in 1955, it seems certain that 1957 will show a good increase. At present there are only six pulp mills, and for this reason the country will continue being dependent on pulp imports for some time to come.

One of the significant events of the year 1956 was the re-establishment by the government of a free exchange market. This has been operating regularly, with the fluctuation characteristic of an exchange market.

A short time ago the Central Bank of the Argentine Republic issued a circular permitting the importation of various types of machinery. This will enable manufacturers to replace worn-out equipment or to import brand new machinery. The effects of this policy will begin to be felt in the vear 1957.

PLAN MILL NEAR BUENOS AIRES . . . The Olin Mathieson Chemical Corp. is planning to build a pulp and paper mill, in partnership with Heinonen S.A., leading Argentine importer of paper and wood products (PULP & PAPER, June, 1957). About $4,500,000 is budgeted for United States machinery, $1,000,000 for a German power plant and special equipment and $1,000,000 is to be spent in Finland, Switzerland, Belgium, Sweden and Italy for miscellaneous equipment. About $7,812,500 would be used for purchase of Argentine equipment and working capital, for a total cost of about $15,000,000.

It is expected that the Export-Import Bank or some other financing agency will cover at least part of the dollar requirements. The plant would be built on property belonging to Heinonen at Las Palmas near Zarate on the Rio Parana, 62 miles northwest of Buenos Aires.

■

BRAZIL . . . . . .

Emphasis on Building Up Pulp Capacity to Decrease Imports

Population: 58,456,000; *Per capita paper consumption:* 19 lbs.
Paper mills: 61. *Woodpulp mills:* 16
Straw mills: 2

Production (short tons)	*1955*	**1956*
Paper	366,450	377,500
Newsprint	37,400	39,600
Chemical woodpulp	98,000	100,000
Groundwood	110,000	110,000
Paper Imports	161,150	166,000
Newsprint Imports	143,440	153,300
Woodpulp Imports	133,000	150,030

Principal pulp imports from: Finland, Sweden, Canada, U.S.A.
*Estimates

—Rio de Janeiro

There has been much activity in Brazil during the past year, particularly in efforts to build up the country's pulp industry. For many years Brazil has depended to a large extent on imported pulp, but recent advances in methods of pulping tropical hardwoods and other native species may enable this Latin American country to become self-sufficient in this respect. Present plans are to expand Brazil's pulp capacity by almost 200,000 tons during the next four years.

Industria de Papel do Para S.A. (IPPASA) plans to build a pulp and paper mill in Belem, state of Para, to produce newsprint, kraft, writing and paper bags for cement (PULP & PAPER June 1957).

Other projects and developments in Brazil are described in the following special reports to this World Review Number.

Search for New Fibers

BY DR. L. J. RYS
Industrial Consultant
—Sao Paulo

Several Brazilian paper mills increased their production during 1956, and some are building small units for pulp manufacture. A number of new, larger units are also on the way.

Brazil's largest newspaper, "O Estado," is building a mill in Sao Paulo to make its own newsprint from eucalyptus, using a new cold soda process. The mill is planned for a 30,000 ton per year capacity.

W. R. Grace & Co. and Cia. Paulista de Estradasde Ferro railroad are undertaking a joint venture to build a $20,000,000 mill in Sao Paulo, using eucalyptus planted years ago as fuel wood for the railroad.

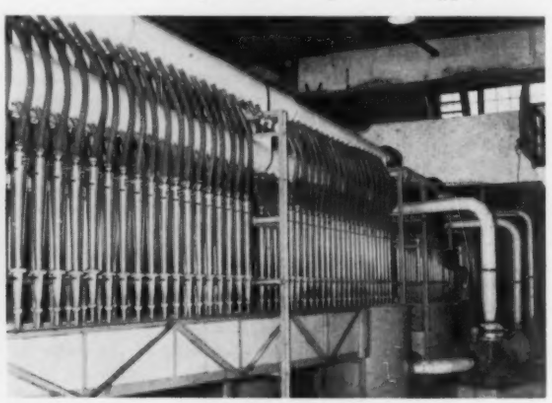
In Amazonas, a new pulp and paper company, Papelamazon, is government supported and will use quick-growing imbauba wood and some textile fiber waste, especially from jute plantations.

There are some other projects planned for the northern part of the country, but these are not very far along. However, the industry in northern Brazil is growing steadily, in spite of handicaps of climate, lack of local markets, difficult transportation and complicated political conditions.

The urgent question for Brazil is still how to manufacture its own newsprint and strong kraft paper in the near future. The only long-fibered wood—Parana pine—is getting more and more scarce, and experiments to replace it with other long-fibered conifers are not far enough advanced to guarantee a dependable supply. Brazil

Storing and Handling Bagasse Pulp

Bleached bagasse pulp and fine paper are produced at the Fabrica de Cellulose e Papel "Piracicaba" mill owned by Refinadora Paulista, S.A.



Modern Equipment at Monte Alegre

Industrias Klabin do Parana de Celulose S.A. has been carrying on extensive expansion. Here is a modern three stage sulfite pulp cleaner.

needs a tree which will not depend on artificial plantations. Virgin forests of broadleaf trees with fiber length of over 2 mm. do exist in Brazil.

For central Brazil, the No. 1 raw material is eucalyptus, originally planted as fuel wood for railroads and iron works. But few new mills based on eucalyptus own enough to meet their needs, and must buy wood.

Bagasse as a raw material is steadily becoming more important, because the supply is dependable. The main disadvantage is its price, which is higher than eucalyptus fiber when taking into account the cost of fuel oil to replace the bagasse in sugar mills.

An interesting long-fibered material for the future is bamboo, which would have to be planted. Waste fibers from textile plants, such as sisal and jute, could be used since their price can compete with high-priced imported kraft pulp.

SUPPLIERS' INDUSTRY GROWING . . . The effort to become self-sufficient in papermaking is going hand-in-hand with an effort to produce the necessary machinery at home. The Cavallari Co., which has been making paper machines for a long time, is increasing its equipment. Cia. Federal de Fundicao of Rio de Janeiro, in association with Parsons & Whittemore of New York and Black-Clawson Co. of Hamilton, O., U.S.A., have begun to manufacture modern papermaking machinery. The German firm of Doerries is starting its own machine shop near Sao Paulo, the Bardela, using German Voith licenses. A factory established by Babcock & Wilcox, Ltd., at Rezende, about midway between Rio de Janeiro and Sao Paulo, will make boilers and other heavy equipment, and will be staffed almost entirely with local labor.

Wet felts, asbestos-cotton drying felts and wires are already made in Brazil, and the quickly growing chemical industry will soon be able to supply all necessary chemicals. Only rosin for sizing is still imported, for at present none of the different rosins, gums or rubber-like products from the rich Amazon forests are used in the paper industry.

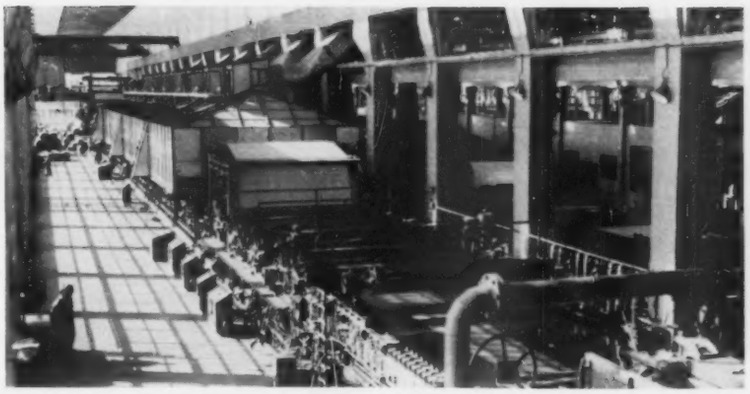
BRAZIL—WOODPULP

	Produced		*Imports*	
	Chemical	*Groundwood*	*Chemical*	*Groundwood*
1950	50	44	145	12
1951	80	110	143	0
1952	80	110	110	0
1953	81	110	107	0
1954	91	110	188	8.5
1955	98	110	133	—
1956	100	110	150	—

BRAZIL—PAPER

(in thousands of short tons)

	Paper	
	Produced	*Imports*
1938	117	55
1947	188	93
1950	275	75
1951	269	58
1952	313	60
1953	330	123
1954	348	135
1955	366	161
1956	378	166



No. 4 Machine at Brazilian Mill

This 155 in. Bagley & Sewall was started up in 1955 at Industrias Klabin do Parana de Celulose's mill in Monte Alegre. The mill was built on a site cut out of the wilderness and only recently obtained connections to main railroads.

Latin-America's Biggest Mill

BY DR. KARL ZAPPERT
Technical Director, Industria Klabin do Parana de Celulose S.A.

—Monte Alegre

Industrias Klabin do Parana de Celulose S.A. is continuing the expansion of its pulp and paper mill at Monte Alegre, state of Parana, which has been underway for the last few years. A Bagley & Sewall No. 4 paper machine, 155 in. wide, was erected in 1954 and produces many kinds of paper including 40 g/m², kraft and grease-proof up to 230 g/m² linerboard. The machine is also equipped with a machine coating arrangement.

All other installations for making newsprint, cardboard, bleached sulfite pulp and semichemical pulp have been running at full capacity, to produce a total output 11% higher in 1956 than in 1955. The Monte Alegre mill, with its daily production of about 300 tons, continues to be the biggest pulp and paper mill in Latin America.

A large extension of the kraft pulp plant has been ordered for 1957; two Brazilian-made digesters will start production in the first half of this year. Simultaneously, a washing and screening plant and an extension of the bleaching plant, supplied by Finnish, Swedish and Norwegian firms, will be put into operation. By the end of the year a complete soda recovery system of Finnish make will begin operating. At the same time a second drum barker, a barking press and a complete new fiber recovery system will be ready.

For early 1958, a complete modification of the 120 in. No. 3 paper machine has been ordered from the Brazilian subsidiary of Black-Clawson Co., to boost production of all kinds of kraft paper and linerboards.

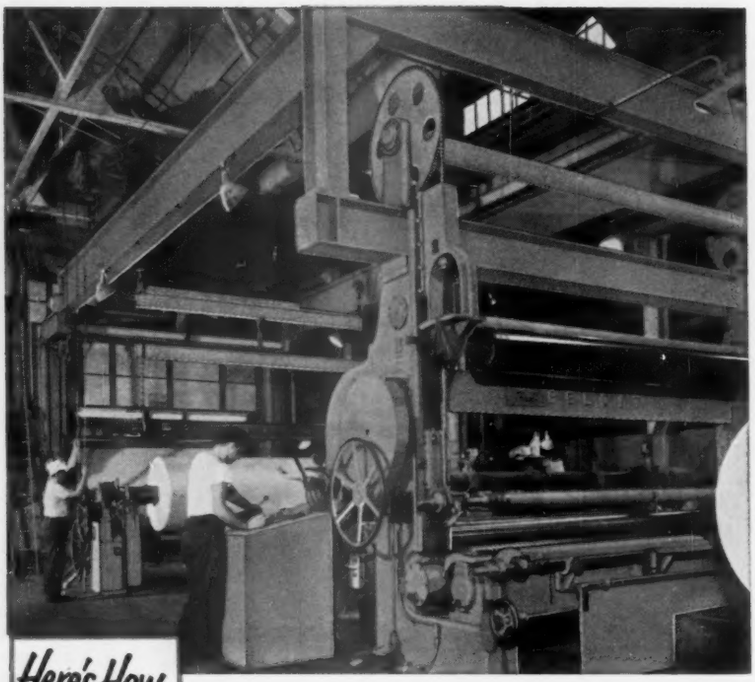
The mill has its own hydraulic power station with a capacity of 22,500 kw and three steam turbines with a total output of 4,500 kw. To accommodate future expansion, a new hydraulic power station and new thermo-electric power station are planned. Coal from the company's own estate will supply fuel.

The research and development department is very busy installing a chemi-groundwood plant and a pilot plant for cold soda pulp. Tropical leafwood which grows in abundance near the mill will be used by both. For newsprint, however, Brazilian pine (araucaria augustifolia) will still be used because it makes excellent groundwood.

The mill started a large reforestation program in 1950 and by the end of 1956, 120 million young pine trees were growing on company land. According to FAO, this program, which will continue at the rate of 20 to 30 million trees a year, is the largest private enterprise of its kind.

Besides Brazilian pine, the following coniferous and leafwood trees were planted on a smaller scale: Chilean pine (pinus radiata), cunninghamia lanceolata, cryptomeria japonica, American longleaf pine, eucalyptus and poplar.

One of the remarkable features of the Monte Alegre mill was the lack of



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rail connections during first years of its existence. The Parana State Railway, in collaboration with Industria Klabin do Parana de Celulose S.A., has now completed a branch line about 75 mi. long, which connects the mill's siding with the main railroad of southern Brazil. Now all raw materials, except wood, and finished goods will be transported by rail.

Other New Enterprises

BY EUGENE F. HORN
Consulting Forester and Wood Technologist

—Fortaleza, Ceara

Cia. Paulista de Estrade de Ferro, which joined W. R. Grace & Co. to form a pulp company (mentioned in Dr. Rys' article), owns plantations of 10,543 acres containing 5,500,000 eucalyptus trees, as well as other plantations totaling 23,500,000 trees. Grace is contributing 90% of the capital, and the Brazilian company 10%. Grace will furnish the technical staff. The mill will have an annual capacity of 100,000 tons of chemical pulp.

The Sociedade de Mineracao Comercio e Pecuaria do Amapa, which owns 300,000 acres of timberland in the territory of Amapa, is planning to install a pulp mill and a sawmill. About 50 species of timber are found on their holdings, and the stands will yield 30 to 45 cords of pulpwood per acre.

Fiber length of Amazonian hardwoods compares favorably with hardwoods of the temperate zone. The problem of using mixed stands of tropical hardwood has been solved by the new "Isograd" soda-sulfur process perfected by Regie Industrielle de la Cellulose Coloniale in its pilot plant at Abidjan, French West Africa. In this plant as many as 25 tropical hardwoods have been pulped together with satisfactory results.

Simultaneous cooking of blends of tropical hardwoods is not only a necessity imposed by the composition of the forest but also gives improvement in both the quality and quantity of the product. The unbleached pulp can be used for almost all types of wrapping and packing paper, including kraft paper for cement bags. The bleached pulp can be used for book paper, blotting paper and fine printing paper.

In Rio Grande do Sul, Comercial Madeireira Sao Jorge S.A. plans to install a pulp and paper mill to produce 15 tons of mechanical pulp, 83 tons of chemical pulp, and 50 tons of paper daily, using eucalyptus and black wattle. (Part of Mr. Horn's article is reprinted by courtesy of Caribbean Forester.)

CUBA . . . . . .

New Tissue Mill Starts Up, More Mills Are On the Way

Population: 5,600,000. *Per capita paper consumption:* 69 lbs.
Paper mills: 5.

	(Short tons) 1955	1956
Paper production	40,000	80,000
Paper imports	118,222	80,000
Chemical pulp imports	40,000	48,000
Dissolving pulp imports	10,200	42,000

—Havana

Our Cuban correspondent, Armando Chavez Clavero, reports that paper production in Cuba was doubled last year, from 40,000 tons in 1955 to 80,000 tons in 1956. At present, all pulp is imported, but several mills intending to make pulp from sugarcane bagasse are either under construction or in the planning stage.

Three mills, Papelera Moderna, Papelera Cubana and Papelera Rio Verde, produce wrapping and bag paper using imported woodpulp. They imported a total of 48,000 tons of chemical pulp last year. Cia. Rayonera Cubana, S.A., in Matanzas, and Cia. Textilera Ariguanabo, S.A., Havana, used 42,000 tons of imported dissolving pulp for the manufacture of rayon. The mill of Envases Perga de Cuba, S.A., was started up in 1955. A subsidiary of Champion Paper & Fibre Co., the mill produces milk cartons using pulp from the No. 13 machine at Champion's Carolina Div., Canton, N.C., U.S.A.

Industria de Papel y Envases S.A., Puentes Grandes, Havana, started up its new tissue mill in Feb. 1957. Reported to be the most modern tissue mill in Latin America, it was equipped entirely by Black-Clawson Co. (PULP & PAPER Apr. 1957). Enrique Cabanes Garcia is president and gen. mgr. of the Cuban firm.

NEW MILLS ON THE WAY . . . Cuba's first sugarcane bagasse mill to make dissolving pulps and paper grades is being constructed in Cardenas in the province of Matanzas, by Tecnica Cubana S.A. The firm is sponsored by the Cuban government and has an investment of about $5 million. Joaquin de la Roza, designer of the De la Roza continuous pulping process, is vice president and technical director. The mill will produce cellulose to be used for rayon and viscose as well as pulp for paper, and will make newsprint and other grades of paper. Present plans are that the mill will be producing about 40,000 tons of pulp annually by 1958.

Cia. Cubana Primadera, S.A., is building a mill at Camaguey, the first in Cuba to produce hardboard from sugarcane bagasse (PULP & PAPER 1956 World Review Number). Previously the bagasse was used to make only a low-density, soft board and insulation board.

A second bagasse board mill is being built in Camaguey, and will use surplus bagasse from the Central San Francisco sugar mills.

Papelera Pulpa-Cuba, S.A., is building a pulp and paper mill, also to use bagasse, near the port town of Trinidad on the Southern coast of Cuba. The mill will produce about 100 tons per day of bleached and unbleached bagasse pulp, paper and board, including corrugating and container board. The plant will have a Black-Clawson paper machine and E. D. Jones 34-in. Double D disk refiners and Jones Royal jordans. Startup is expected by July, 1958 (PULP & PAPER May 1957).

Grace Internacional S.A., owned by W. R. Grace & Co., is planning to build a bagasse pulp and paper mill to supply its subsidiary, Envases Industriales y Comerciales S.A., a leading converting plant. The new mill will produce 50 tons per day of wrapping, corrugating and liner board. Part of the output will be sold on the Cuban market.

A tissue mill is being built in Aguila-Hatuey, Cotorro, province of Havana, by Bohon Trading Corp., wholly-owned subsidiary of Stevens-Thompson Paper Co., Greenwich, N.Y. Sandy Hill Iron and Brass Works supplied a tissue machine for this mill.

Pres. John Shaybuck of Cuba Bagasse Products has announced plans to build a mill to make bagasse boards, in the Cienfuegos zone. The board will be intended as a substitute for plywood. Construction is scheduled to begin as soon as financing details are completed.

PLENTY OF RAW MATERIAL . . . There are presently 170 sugar mills in Cuba, producing annually about 5,000,000 tons of bagasse. Most of this has been used for fuel, but the new mills being built may cause them to substitute another fuel.

Cuba has large quantities of other vegetable matter that is rich in cellulose. It is expected that the Cuban Dept. of Agriculture, staffed by competent technicians, will eventually be able to exploit these resources.

CUBA—CONSUMPTION

	1955	1956
	(Short tons)	
Newsprint (all imported)	31,620	33,000
Writing and printing	14,300	21,000
Wrapping papers	42,350	45,000
Paperboard	37,320	47,000
Others	32,500	34,000

URUGUAY . . . . . .

Plan for Semi-Chemical Pulp Mill Under Study

Population: 2,700,000. *Per capita paper consumption:* 47.7 lbs.
Paper mills: 5
Pulp mills: 2

Production (short tons)	1955	1956
Paper and board	35,000	38,500
Mechanical pulp	1,000	1,100
Wheat straw pulp	5,000	5,500
Paper and board imports	26,500	33,000
Woodpulp imports	18,000	19,800
Principal paper grades made (short tons):		
Kraft	5,500	
Sulfite paper	5,500	
Book and writing	14,300	
Tissue	2,200	
Paperboard	3,300	
Others	7,700	

Principal woodpulp imports from: Sweden, Finland

BY JUAN CARLOS RAFFO FRAVEGA
President, Fabrica Nacional de Papel, S.A.
—Montevideo

A plan for the installation of new plants to make mechanical and semi-chemical pulp, using poplar and pine, is now under study. Planting of these trees has been increased in recent years. Several Latin American countries would cooperate, installing mills where raw materials are plentiful, with capital contributed by all members.

Uruguay's industry produced 35,200 tons of paper and 3,300 tons of board in 1956, for a total of 38,500 tons. This is 3,500 tons higher than in 1955 and, with imports of 33,000 tons last year, gives Uruguay the highest per capita consumption in South America. Newsprint was the principal import, at 29,700 tons.

Production capacity of the country's five paper mills, excluding paperboard mills, is about 68,000 tons. Thus there is an unused capacity which could produce an additional 33,000 tons. A consumption of about 72,000 tons is estimated for 1957, with proportional increases in all qualities.

RAW MATERIAL RESOURCES . . . During 1956 about 20,900 tons of woodpulp were imported. About 6,600 tons of wheat straw pulp was produced by the Pomilio Cloro-Gas process, and an additional 6,600 tons from cuttings.

The forest resources of Uruguay are very limited and pulp consumption is also small. Since consumption includes sulfate and sulfite pulp, bleached and unbleached, of various characteristics, it would be necessary to install several plants of small capacity. This would make costs prohibitively high.

LATIN AMERICA

CHILE . . . . . .

Newsprint Mill Starts Up, Kraft Pulp Mill on the Way

Population: 6,774,000; *Per capita paper consumption:* 24 lbs.
Paper mills: 5 *Paperboard mills:* 29

Production (short tons)	1955	1956
Paper	60,627	59,436
Mechanical woodpulp	19,630	19,654
Straw pulp	2,428	2,834
Newsprint imports	15,364	15,400
Other paper imports	2,075	1,161
Woodpulp imports	34,717	29,810

Principal pulp imports from: Sweden, Finland, U. S., Canada
Principal paper imports from: U.S., Sweden, Canada

—Santiago

There was very little change in Chile's pulp and paper production in 1956 compared with 1955, according to information obtained here for PULP & PAPER by Francisco Schnake of Cia. Manufacturera de Papeles y Cartones S.A. Paper production was down slightly, from 60,627 tons in 1955 to 59,436 tons in 1956, while pulp production increased about 400 tons. The next few years are expected to show good increases, however, with several new mills due to begin operating.

A newsprint mill built by Cia. Manufacturera de Papeles y Cartones S.A., in southern Chile on the Bio-Bio River opposite the city of Concepcion, started up in April 1957. Initial annual capacity is estimated at 60,500 tons, eventually to be increased to 77,000 tons. The project was sponsored by the International Bank for Reconstruction and Development, which loaned the company $20,000,000 for construction of the newsprint mill and a kraft pulp plant to supply it. The loan was guaranteed by Chilean Development Corp. (Corporacion de Fomento de la Produccion, or CORFO).

This new kraft pulp mill, at Laja, also on the Bio-Bio River, is expected to be in operation early in 1958, with a rated capacity of 77,000 tons. Besides supplying the pulp requirements of the newsprint mill (about 6,600 tons a year initially), it will also sell pulp to Chile's paper industry generally, and will export excess production. Insignis pine from company-owned timberlands will satisfy much of the mill's timber requirements.

Cia. Manufacturera de Papeles y Cartones S.A. is Chile's major paper company, producing almost all of the country's paper requirements. In 1955 the firm built an integrated groundwood and newsprint mill, with annual production of 40,000 tons and 44,000 tons respectively (PULP & PAPER 1956 WORLD REVIEW NUMBER).

CORFO has developed plans for another new company, Empresa Nacional de Cellulosa, S.A., to build a cellulose mill. Initial capital of 4,100 million pesos ($8,266,000) was contributed by CORFO (1,500 million pesos, or $3,025,000), Servicio de Seguro Social (1,500 million pesos), Caja de Empleados Publicos y Periodistas (1,000 million pesos, or $2,016,000) and Corporacion de Inversiones (100 million pesos, or $201,600).

The firm plans to employ foreign technicians, probably German, to determine the best site for the mill. CORFO has made arrangements for manufacturers' credits, also believed to be German, for $15,000,000 worth of machinery and equipment. The plant is planned to produce 75,000 tons annually of bleached pulp for paper, the bulk to be exported to South American markets.

ADEQUATE NATURAL RESOURCES . . . Surveys made by the U.S. Forest Mission in 1944-46 and later by CORFO, in the provinces of Nuble, Concepcion, Linares, Maule, Bio-Bio, Arauco and Malleco show that there are 200,000 hectares (494,200 acres) of forest plantations in these provinces, and that 90% of the trees are insignis pine. This pine is native to the Southwestern United States, but its growth in Chile is greater than in the U.S. It has been grown since 1916 in all these provinces, but mainly in the Concepcion area.

CORFO estimates that existing plantations can produce 146,000,000 cu. ft. of timber annually. Northern Chile has salt, lime and sodium sulfate, and there is an abundant hydroelectric power potential in the South, near the forest plantations. Coal is also plentiful.

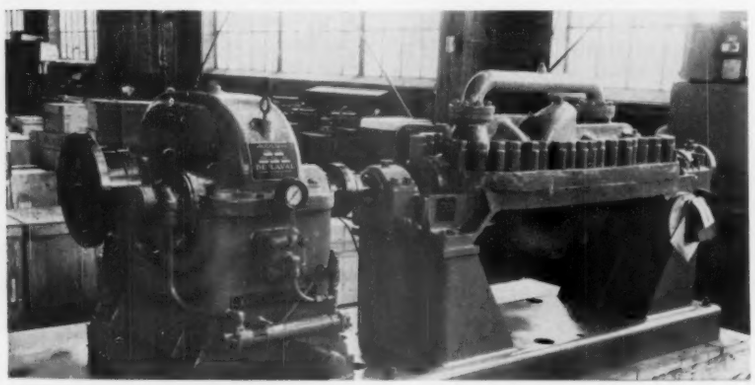
This assures adequate supplies of essential raw materials to meet the requirements of CORFO's planned expansion of Chile's pulp and paper industry. Announced last year, the plans call for a total of eight mills to be in operation by 1970, with a combined production of 800,000 tons.

CHILE—PRODUCTION—IMPORTS—CONSUMPTION
(in thousands of short tons)

	Production		*Imports*		*Total*
	Newsprint	*Other Papers*	*Newsprint*	*Other Papers*	*Consumption*
1949	9.	37.7	15.4	3.3	65.5
1950	12.1	34.7	21.5	1.7	70.1
1951	12.1	36.3	14.0	1.8	64.4
1952	12.8	36.1	11.0	1.8	61.8
1953	10.3	42.1	14.6	1.6	68.7
1954	13.6	43.7	12.7	1.1	72.8
1955	12.7	47.9	15.4	2.1	78.1
1956	12.1	47.3	15.4	1.2	76.0

CHILE—PULP PRODUCTION
(in thousands of short tons)

	Mechanical Pulp	*Straw Pulp*
1949	14.3	6.0
1950	16.9	4.9
1951	17.1	5.2
1952	19.0	4.1
1953	16.2	4.8
1954	20.8	3.6
1955	19.6	2.4
1956	19.7	2.4



U. S. Machinery for Chilean Mill

Step-up gear and boiler feed pump installed at Bio-Bio newsprint mill of Cia. Manufacturera de Papeles y Cartones, S.A., at Concepcion, Chile, was supplied by De Laval Steam Turbine Co., Trenton, N.J. The mill went into production in April 1957.

GUATEMALA . . . . .

Predict Paperboard Sales to Increase 100% in 1957

Population: 3,300,000; *Per capita paper consumption:* 10 lbs.
Paper mills: 1; *Pulp mills:* 1

	1955	1956
Paper Production	700	900
Straw and other pulp	700	900
Paper imports	4,000	8,000
Paper exports	100	300

Principal paper grades made: Paperboard
Principal paper imports from: U.S.A., Finland, Sweden
Principal paper exports: El Salvador, Honduras, Costa Rica

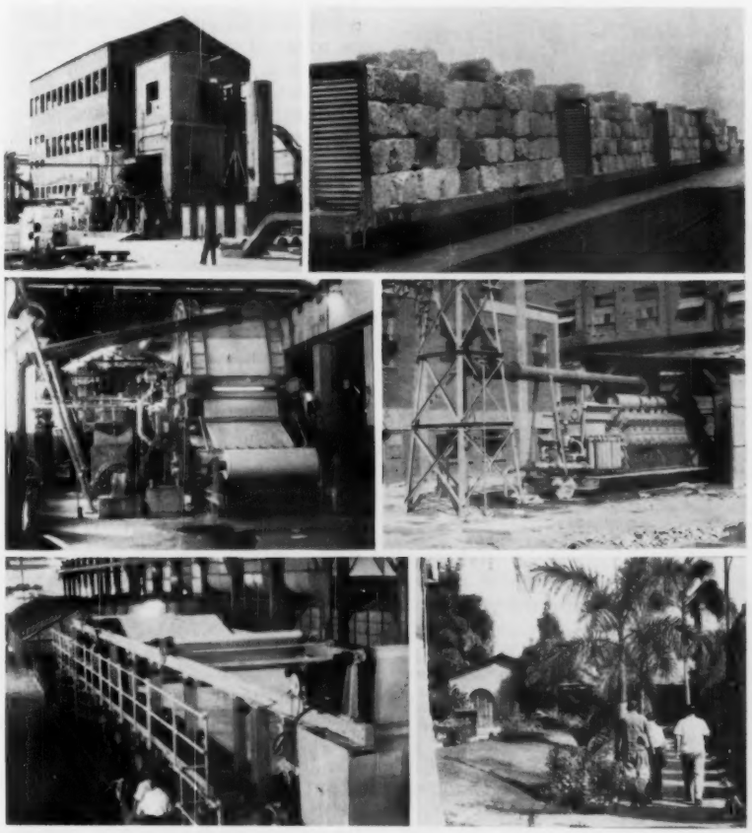
—Guatemala City

Minor R. Keilhauer, president of Industria Papelera Guatemalteca, reports to PULP & PAPER that economic conditions in Guatemala are so good that sale of paperboard in 1957 is expected to increase by 100% over 1956. The fact that major oil companies have been granted rights to drill for oil, with good possibilities of finding new oil fields in Guatemala, is one reason for this optimism.

Mr. Keilhauer is the young industrialist who invested over a million dollars in the first paper mill ever built between Mexico and Colombia in Latin America. The mill was unique in that for its first years of operation, it used lemon grass residue from his oil process plant to make paperboard as a by-product. Conventional raw materials were used later.

During 1956 and early 1957 Guatemala completed commercial treaties which permit paper and board to enter several Central American republics free of import duties. This is reflected in the rise in exports from 100 tons in 1955 to 300 tons in 1956.

Cartonera Centroamericana S.A., which installed a new corrugating machine in 1955, is now shipping boxes to many new customers in Central America as a result of the treaties. The machine, with a 500 ton per month capacity, is said to operate on a 24-hour schedule.



Pictures by Traveling Editor in Peru

DeWitt Gilbert, Miller Freeman Publications editor, took these pictures for PULP & PAPER showing scenes at expanding W. R. Grace & Co. mill at Paramonga: (Top, left) New bagasse pulp mill; (right) Baled bagasse. (Center, left) Cameron laminating machine; (right) Outdoor diesel power. (Bottom, left) New Sandy Hill machine; (right) Club garden on mill grounds.

PERU . . . . . .

Soon Will Supply All Its Own Paper Requirements

Population: 9,396,000; *Per capita paper consumption:* 7 lbs.
Paper mills: 6

	1955	1956
Paper production	29,820	36,000
Pulp production	13,000	15,000
Newsprint imports	14,500	15,000
Pulp imports	9,500	10,000

Principal imports from: Canada, Finland, Sweden, Norway, U.S.A.

—Paramonga

Construction is under way and equipment is being installed in a new $1,900,000 pulp unit at W. R. Grace & Co.'s pulp and paper mill in Paramonga, about 100 miles north of Lima. DeWitt Gilbert of Miller Freeman Publications visited the mill recently and gave PULP & PAPER a first-hand report on progress there.

Installation of an 84 in. paper machine by Sandy Hill Iron & Brass Works was completed last fall, at a cost of about $1,200,000. This is machine No. 3. No. 1 is a German Voith machine installed in the late 1930's. During WW II, No. 2 machine was imported from the U.S. It was a combination cylinder and Fourdrinier machine by Moore & White of Philadelphia in 1908. Subsequently it was remodeled as a Fourdrinier entirely and the cylinders are now used in No. 3. The Moore & White is run at a speed of 180 fpm.

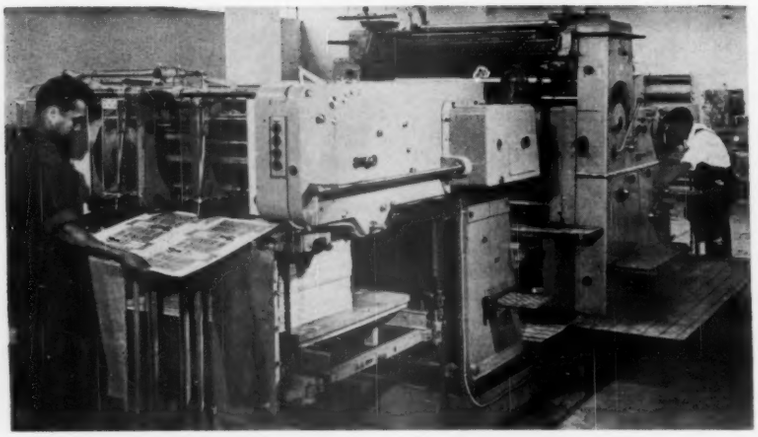
Besides these machines, a smaller Cameron machine makes laminated stock. Annual production at Paramonga is now around 33,000 tons, and is expected to increase by 50% when the new process goes into operation.

Bagasse for the mill comes from the company's own sugar hacienda in the immediate vicinity. These grounds were farmed in pre-Inca days five to six hundred years ago. Some of the irrigation ditches now bringing water to the cane fields were used by tribes in this region before the Incas conquered them in the 15th century.

Bagasse from the sugar mill is now diverted into one or more of the following channels: Directly to the pulp

PERU—IMPORTS
(In thousands of short tons)

	Ground-wood	Chem. Pulp	News-print	All Paper
1947	0.2	2.4	7.4	11.4
1949	0.02	6.8	6.3	20.6
1950	0.8	7.9	9.0	20.9
1951	0.5	6.8	11.7	23.1
1952		10	11	14
1953		13	12	15
1954	2.5	3	12	15
1955	2.8	4	14.5	16
1956	4	6	15	16



Making Containers in Peru

The Envases Sanmarti factory in Lima, built in 1955, produces printed cartons and other paper containers, using part of Paramonga mill's paper production. W. R. Grace & Co. has major interest in this plant.

mill; to the boilers to generate steam; or to a dryer and baler as reserve supply for the pulp mill. With completion of the latter, the amount of bagasse going to the boilers will be greatly reduced or eliminated entirely.

During Mr. Gilbert's visit the pulp mill was operating on baled bagasse while the sugar mill was shut down for its annual overhaul which takes one to two months.

In addition to the sugar and pulp mills, the plant includes a small installation to manufacture caustic soda used in pulping. There is also an industrial alcohol plant where the company makes alcohol from waste molasses, as well as rum for Peruvian consumption.

One interesting feature of the plant is that all the boilers are out in the open with no housing except a wall around them. In Paramonga, rainfall is virtually unknown.

The Grace continuous process for pulping bagasse was invented by the founder of Birdseye Frozen Foods, Clarence Birdseye, who died last year. Raw bagasse, which resembles rough, gritty sawdust, is chemically converted to pulp in not more than eleven minutes. The mill at Paramonga is the first to use the Birdseye process, which eliminates the characteristic kraft mill odor to a considerable degree. Limited amounts of pulp are imported from North America to blend with bagasse pulp in making better grades of papers.

A substantial part of the mill's production goes into liner and corrugating material to make fiber cases for the growing food production of Peruvian canneries. Two-thirds of the mill's production is consumed by Grace's own conversion industries.

An $11 million newsprint mill, financed by Peru's Farm and Agricultural Development Bank, will have a capacity of 18,000 tons, sufficient to take care of Peru's entire newsprint requirements. At last reports the mill was to be at Iquitos, on the Ucayli River, with an alternate site at Pucallpa, also on the Ucayli.

Peru's six existing mills now provide about 70% of Peru's paper needs. Its principal imports are bleached sulfite woodpulp, used mainly for rayon, and unbleached sulfite, for mixing with bagasse.

■

COLOMBIA . . . . . .

Industry Grows; New Mills Scheduled for '58 Startup

***Population:** 12,657,000; **Per capita paper consumption:** 12 lbs.*
***Paper mills:** 1*

	1955	*1956*
Paper production	36,400	46,000
Mechanical pulp imports	9,800	9,400
Chemical pulp imports	14,000	13,000

***Principal paper and pulp imports from:** U.S., Canada, Sweden, Finland.*

—Bogota

Colombia is on the way to becoming an important pulp and paper producer, with three new mills under construction. Parsons & Whittemore-Lyddon, an American firm, has contracts with the Colombian government to construct three paper mills at a total cost of about $30 million. W. R. Grace & Co., wth its Birdseye-invented continuous bagasse process, also has plans in Colombia.

Empresa Nacionales de Publicaciones, which owns and operates the government printing and publishing plant, contracted for one of the Parsons & Whittemore mills, located at Bogota. A 30,000 ton newsprint machine has been purchased and is expected to start operations in June 1958. Industria de Papel will operate a 50-ton per day mill to make white writing and printing paper. Sociedad Colombiana Industrial S.A. is backing a 100-ton per day mill near Cali in the state of Valle del Cauca. This mill will make bleached pulp for paper. They are all expected to begin operating by mid-1958. Black-Clawson Co. is supplying the pulp and papermaking machinery.

Colombia's Instituto de Fomento Industrial, with Container Corp. of America as part stockholder, at last reports was planning a new mill based on technical studies made by Ebasco Services in New York.

Container Corp. owns Colombia's only existing mill, Carton de Colombia S.A., with a U.S.-built Pusey & Jones machine, at Cali. Output at this mill was increased about 30% during 1956. The mill makes bagasse pulp, box board, container board, kraft bag and wrapping.

■

COLOMBIA—IMPORTS
(In thousands of short tons)

	Acetate-Rayon Pulp	*Paper Pulp*	*News-print*	*All Paper*
1946	1.8	0.2	11.2	27.5
1948	2.4	0.2	15.5	35.3
1949	1.2	0.2	13.3	40.7
1950	2.6	0.2	20.9	54.0
1951	N.A.	N.A.	25.4	N.A.
1952	2	1	28	N.A.
1953	2	7	20.4	63.3
1954	3	18	21	65
1955	3	20	22	68
1956	3	19	20	60

BRITISH GUIANA AND BRITISH HONDURAS

Native Wood Suitable for Pulp

***Guiana population:** 465,416. **Per capita paper consumption:** 26.1 lbs.*
***Honduras population:** 73,171. **Per capita paper consumption:** 33.7 lbs.*

—Georgetown

Both British Guiana and British Honduras, with high percentage of white population, have higher paper consumption than most Latin American countries, but neither has a paper industry. British Guiana exports mahogany, logwood and cedar to the U.S., and timber is also an important export in British Honduras. Experiments on the wallaba tree, found in the Guianas, indicate it may be suitable for producing sulfate pulp and almost every type of paper except those requiring high strength. Despite studies, no action was taken in the past year to use wallaba.

ECUADOR . . . . . .

Now Has Two Mills

Population: **3,570,000.** ***Per capita paper consumption:*** **7 lbs.**
Production: **1000 tons**
Consumption: **12,000 tons**

—Quito

An integrated pulp and paper mill was due to start up at Latacunga during 1956. When in full production it will have an output of 3,000 tons annually, mostly wrapping paper, according to local commerce officials. Raw material for the mill, which will use the sulfate process, was to include guarama (called cetico in Peru), a tropical tree which has been successfully tested for chemical and mechanical pulp in France and England.

Ecuador's only other mill is small, producing only about 400 tons of paperboard a year from waste.

DUTCH-FRENCH GUIANAS .

May Get Pulp, Paper Mill

Populations: **French Guiana, 29,000; Dutch Guiana, 240,000.** ***Per capita consumption of paper:*** **3 lbs.**

—Paramaribo, D. G.

The largest pulp and paper company of the Netherlands, N. V. Van Gelder Zonen, is interested in financing a project to plant pinus Caribeae (slash pine) in Dutch Guiana (Surinam) and possibly to build a pulp and paper mill here. The government has reserved 8,400 acres for the plan.

French Guiana has immense forests but they are unexploited, although some timber is exported.

BOLIVIA . . . . . .

Only One Paper Mill

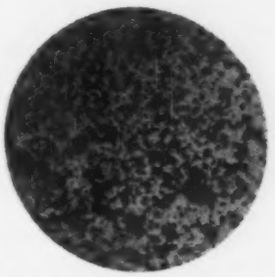
Population: **3,198,000.** ***Per capita paper consumption:*** **3 lbs.**
Paper production: **800 tons**
Consumption: **3,917 tons**

—La Paz

Bolivia has only one paper mill, Fabrica y Manufactura de Cartones y Taleres Litograficos at Purapura, La Paz. This mill turns out about 800 tons a year of various types of paper. Per capita paper consumption is lower here than in most other Latin American countries.

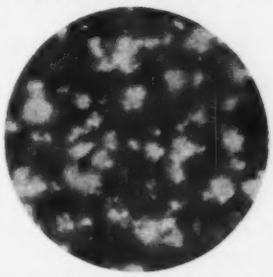
HOW SUBOX PAINTS ACTIVELY COMBAT CORROSION

Subox paints go far beyond the passive protection of inert paints. The chemically-active suboxide of lead in Subox paints actually works continuously to combat corrosion, as illustrated by these photomicrographs:



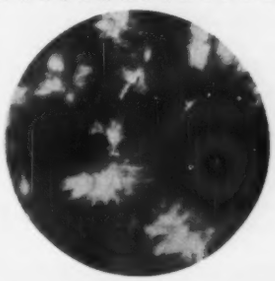
LEAD-SUBOXIDE PARTICLES

Lead-suboxide is a colloidal pigment which assures maximum penetration of a surface . . . packs to form a dense, impervious film. Two coats of Subox usually give the coverage of three of other paints . . . often, one coat of Subox is enough.



FIELD OF LEAD SOAPS

As soon as Subox is dry, lead-suboxide begins to react with the fatty acids of the vehicle to form insoluble lead soaps whose fibers bear metallic lead. These fibers intertwine to continuously build up a reinforcing film of protection.



FIBROUS STRUCTURE OF LEAD SOAPS

The fibrous film gradually strengthens and replaces the original vehicle film which otherwise would have become brittle and have largely lost its protective power and adhesion.

Subox paints are the only American paints made with lead-suboxide. They are economical to apply, endure for years and largely eliminate the need for scraping and repriming when repainting is required.

Write for the brochure "Subox Paints".

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LATIN AMERICA

VENEZUELA . . . . . .

New Mill Nears Completion, Recruits U. S. Papermakers

Population: **6,533,000.** ***Per capita paper consumption:*** **9.6 lbs.**
Paper mills: **4**
Paper production: 13,200 tons
Paper imports: 18,158 tons
Pulp imports: 6,600 tons
Principal paper grades made: **Kraft, sulfite, book and writing, paperboard, tissues**
Principal pulp imports from: **United States, Canada**

—Caracas

Construction is well under way for the modern pulp and paper mill being built by C.A. Venezolana de Pulpa y Papel ("Venepal"), near Moron on the Northern coast of Venezuela. All machinery is scheduled to arrive this summer and startup is expected by the end of the year. The mill is designed for normal capacity of 143 tons per day and can be stepped up to 165 tons per day.

J. M. Voith of Heidenheim, Germany, is supplying most of the papermaking machinery and stock preparation equipment, including two machines. No. 1 machine is a Fourdrinier equipped with 115 ft. wire, secondary head box, suction couch, 10 to 12-in. suction boxes, two suction presses, smoothing press, breaker stack, size press, 40 to 60-in. diameter dryers and two open face calender stacks. The machine will trim 160 in. and is designed for speeds up to 1,500 fpm.

No. 2 is a Yankee for making M.G. kraft wrapping and bag paper. It will have a 75 ft. wire suction couch, five suction boxes, one suction press, two pressure rolls and a 16 ft. diameter dryer. It will trim 120 in. and is designed for speeds up to 800 fpm.

Voith pulpers, refiners, jordans and proportioning equipment are divided into three distinct systems: for the No. 1 machine, a kraft system with provisions for making top liner; a system for the No. 2 machine; and a system for waste paper.

The power plant will have Babcock & Wilcox boilers with 90,000 lbs. steam per hr. each and a 9,165 kw Worthington turbo generator. A Dorr-Oliver plant with 3,100,000 gpd capacity will treat water pumped 2½ miles from the Yaracuy River. A 70 ton pulp mill with bleach plant and chemical recovery is planned.

A complete town for key personnel will be built at the mill site.

A Venezuelan industrial group headed by Eugenio Mendoza is building the mill. Dr. Gerardo Sanson is vice president and general manager. Dr. Henrique Thielen, technical director, is responsible for selecting equipment and formulating design and technical policy for the plant. Roy D. Rivers, well-known U.S. papermaker, is general superintendent. Cecil E. Thompson, 63 Grand St., Croton-on-Hudson, N.Y., is consultant. Most key personnel will be recruited in the U.S. and Canada.

At present Venezuela has four mills producing paper. The largest is Industrial Del Carton, C.A., with a capacity of 25 tons a day. Venezolanos, Papeles, C.A., makes about 20 tons a day of wrapping, napkin and towels. Fabricia de Papel de Maracay produces about 125 tons of tissue a week and another smaller mill makes 18 tons a week. Venezuela imports all newsprint, amounting to 23,000 tons in 1956. The Venezolana de Pulpa y Papel, C.A., pulp mill will be the first one in the country.

Scale Model of New Mill in Venezuela

Venezolana de Pulpa y Papel's new pulp and paper mill near the Yaracuy River about 20 miles west of Puerto Cabello will add approximately 43,000 tons to Venezuela's annual paper production.

HAITI . . . . . .

Seeks Industries, Too

Population: **3,305,000.** ***Per capita paper consumption,*** **4 lbs.**
Production: **none.**

—Port-au-Prince

This French-speaking negro republic has cast envious eyes on neighboring islands' success in bringing in industries but made little headway in that direction in the past revolution-torn year. There have been indications, however, of possible future foreign investment in paper converting plants. Bagasse is plentiful but markets would be needed outside Haiti for a pulp and paper mill.

COSTA RICA . . . . . .

Mill Uses Abaca Fiber

Population: **951,000.** ***Per capita paper consumption:*** **14.2 lbs.**
Paper production: **3,000 tons**
Consumption: **6,490 tons**

—San Jose

Costa Rica has rich forest resources and a growing lumber industry, but its one mill uses other types of raw material. This 3,000 ton kraft mill originally used waste manila, hemp and waste from nearby factories but was establishing its own raw material supply from abaca, a fast-growing fiber found on plantation. The poro gigante has also been tested and found acceptable for papermaking.

NICARAGUA-HONDURAS .

Rich Forest Reserves Untapped

Honduras population: **1,660,000.** ***Per capita paper consumption:*** **4.1 lbs.**
Paper mills: **none**
Paper imports: **4,000 short tons**
Nicaragua population: **1,245,000.** ***Per capita paper consumption:*** **7.8 lbs.**
Paper mills: **none**
Paper imports: **5,000 short tons**

—Managua, Nic.

Honduras is said to offer most favorable conditions for the establishment of a pulp and paper industry in Central America, but the rich tropical forests of both Honduras and Nicaragua are still unexplored. A United Na-

tions FAO technical mission has been studying the best location for a mill in Honduras and has tentatively recommended a site in the state of Yore.

The Nicaraguan forests contain hundreds of species which could be a prolific source of hardwood pulpwood. A. R. McBirney, of Compania Minera la India, Nicaragua, said studies by his company showed from 4 to 28 cords of wood per acre in one 800 square mile tract. The major problem would be getting it out of the woods and to the mill, as the forests are much wetter than in temperate zones.

■

PARAGUAY . . . . . .

Rich Forests, Poor in Paper

Population: 1,565,000; *Per capita consumption:* 3.6 lbs.
Production: 480 tons roofing board
Imports: 2,246 tons

—Asuncion

The mountain slopes of Paraguay are covered with luxuriant forests and its rivers and lakes make it one of the best watered countries in the world. But paper consumption is so low, only about 2,250 tons a year, that it is not economically feasible to have a paper mill here, according to commerce ministry executives. There is a roofing board mill, Papelera Paraguaya, which produces about 450 tons a year.

■

PUERTO RICO . . . . . .

Grace Acquires Container Firm

Population: 2,210,703. *Per capita consumption of paper:* 10 lbs.
Paper mills: 2. *Bagasse pulp mills:* 2.
Paper production: 24,000 tons.
Bagasse pulp production: 12,000 tons

—San Juan

W. R. Grace & Co., through its recently-formed Latin American Paper & Chemical Group, acquired Puerto Rico Container Corp. of Santurce, as a preliminary to extending pulp and paper production in this and other areas. Present plans call for construction of mills using bagasse or other fibers, employing the Birdseye pulping process.

There are two existing mills on the island. Portorican Paper Products, Inc. makes bagasse pulp and about 60 tons a day of board. Ross, Shartle, Downingtown and Noble & Wood equipment is used. Borinquen Pulp & Paper Mills has a Yankee Fourdrinier and cylinder and two bagasse pulp digesters making about 25 tons a day of bleached and unbleached.

■

BRIT. CARIBBEAN FED. . .

Tax Benefits Lure Industry

Population: 2,921,000. Comprised of: Jamaica, 1,520,000; Barbados, 230,000; Trinidad, 678,000; Bahamas, 87,000; Windward Is., 283,000, and Leeward Is., 123,000.
Per capita consumption of paper: 10 lbs.
Paper production: none. *Imports:* 15,000 tons.

—Kingston, Jamaica

Biggest news this year in these British owned but self-governing islands is "Federation" and to the native population it is hailed as something of a "millenium."

Wills O. Isaacs, minister of trade and industry in Jamaica, told PULP & PAPER that liberalization of industrial income tax laws and import duties are aimed especially to stimulate American paper and paper products manufacturers to come here.

Industrial Development Corp., 4 Winchester Road, Half-Way-Tree, Jamaica, headed by Harold A. Braham, is busy at just what its name implies. I.E. "Brim" Brimble, on the IDC staff, knows pulp and paper well. He was associated with construction of the Columbia Cellulose mill at Prince Rupert, B.C. (Canada).

"We use about 6,000 tons of paper

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Camp Manufacturing Company	Franklin, Virginia
Champion Paper & Fibre Company	Pasadena, Texas
Container Corporation of America	Fernandina, Florida
Dexter Sulphite Pulp & Paper Company	Dexter, New York
Hudson Pulp & Paper Corporation	Palatka, Florida
National Container Corporation	Jacksonville, Florida Valdosta, Georgia
St. Joe Paper Company	Port St. Joe, Florida
St. Regis Paper Company	Jacksonville, Florida Pensacola, Florida
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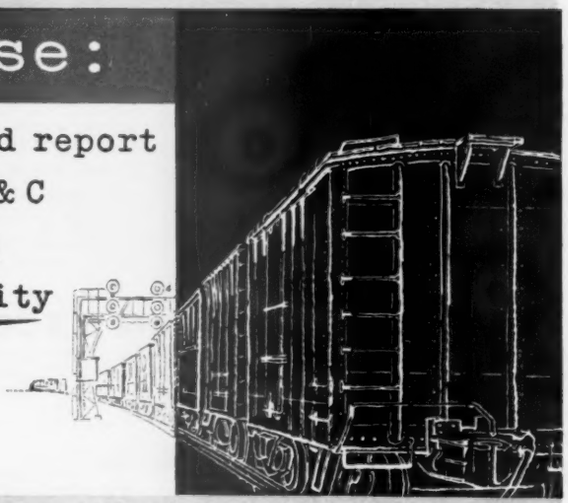
MIN CHEMISTRY *at work*

case:

Condensed report on how M & C controls the quality of paper clays



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(5) *Standard* "Guard Duty"—no car of Edgar-M & C paper clay rolls until the laboratory tests and okays finished product specifications. Each bag is a machine-weighed, scale-checked unit . . . each car approved for damage-free transit.

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per year in Jamaica and about 15,000 tons throughout the Federation," he said. "Certain grades of this paper could never be made from bagasse pulp, and that is what really stops an investor. The Philippines' 20 million population, as against Jamaica's 1 1/2 million, can very well keep a low grade bagasse pulp-paper mill running. But anything less than 30 tons a day of paper for a mill here is uneconomical."

However, IDC has brought a paper converting plant to a new attractive industrial center, where plants are rising every few months, in the outskirts of Kingston.

■

DOMINICAN REPUBLIC . .

Plans for Mills Hang Fire

Population: **2,653,481.** ***Per capita paper consumption:*** **5 lbs.**
Paperboard mills: **1.**

	1955	1956
Paperboard production (short tons):	98	100
Paper and board imports:	6,171	7,154

Principal paper imports from: **U.S., Norway, Sweden, Finland**

—Ciudad Trujillo

Several plans to build up the Dominican Republic's pulp and paper industry have been considered but to date the little country has only one small paperboard mill. An 8,500 ton capacity bagasse mill to make printing and writing paper and newsprint has been proposed and another mill to use waste materials from a large lumber company in Santiago is under consideration.

Ramon Menendez, undersecretary, Office of Industry and Commerce, Ciudad Trujillo, reports that in 1956 paper and paperboard imports came to 7,154 tons, an increase of 1,000 tons over 1955. The U.S.A., Norway, Sweden and Finland are the principal suppliers.

■

EL SALVADOR . . . . . .

Tiny Country Has Board Mill

Population: **2,193,000.** ***Per capita paper consumption:*** **8.3 lbs.**
Paper production: **300 tons a year**
Imports: **8,738 tons**

—San Salvador

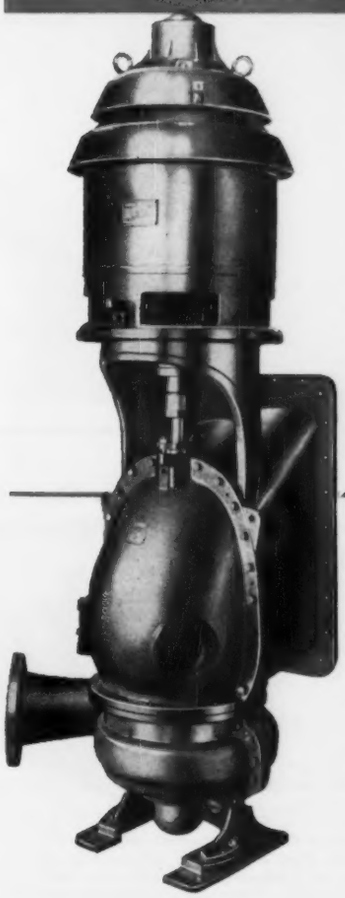
El Salvador, smallest Central American republic, has a paperboard mill, Cia. Casanellas J., which produces about a ton a day of cylinder board from a 36 in. cylinder machine.

THE

Bingham "PULP HOG"

FOR DECKER, WASHER OR THICKENER

A STOCK PUMP THAT CANNOT BE AIR-BOUND!



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The Bingham Pulp Hog is characterized by a *large suction opening* and *non-clogging impeller of the top suction type. Impellers are specially designed to efficiently handle both high and low consistency stock.*

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- **Permits installation at convenient locations in mill flow line.**
- **Permits use of available floor space regardless of location of storage chest or other equipment.**
- **Operates successfully in basements or on any floor level.**
- **Eliminates need for dump chests.**
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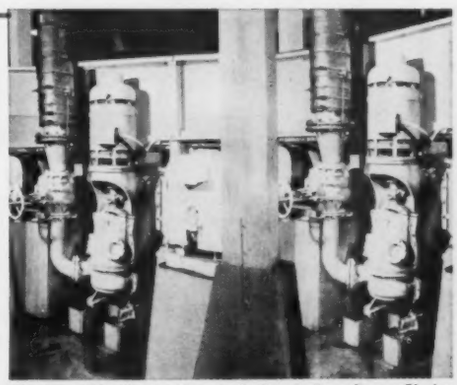

Bingham Pulp Hogs taking stock directly from Doctor Blades of Deckers, Weyerhaeuser Pulp Mill, Longview, Washington.

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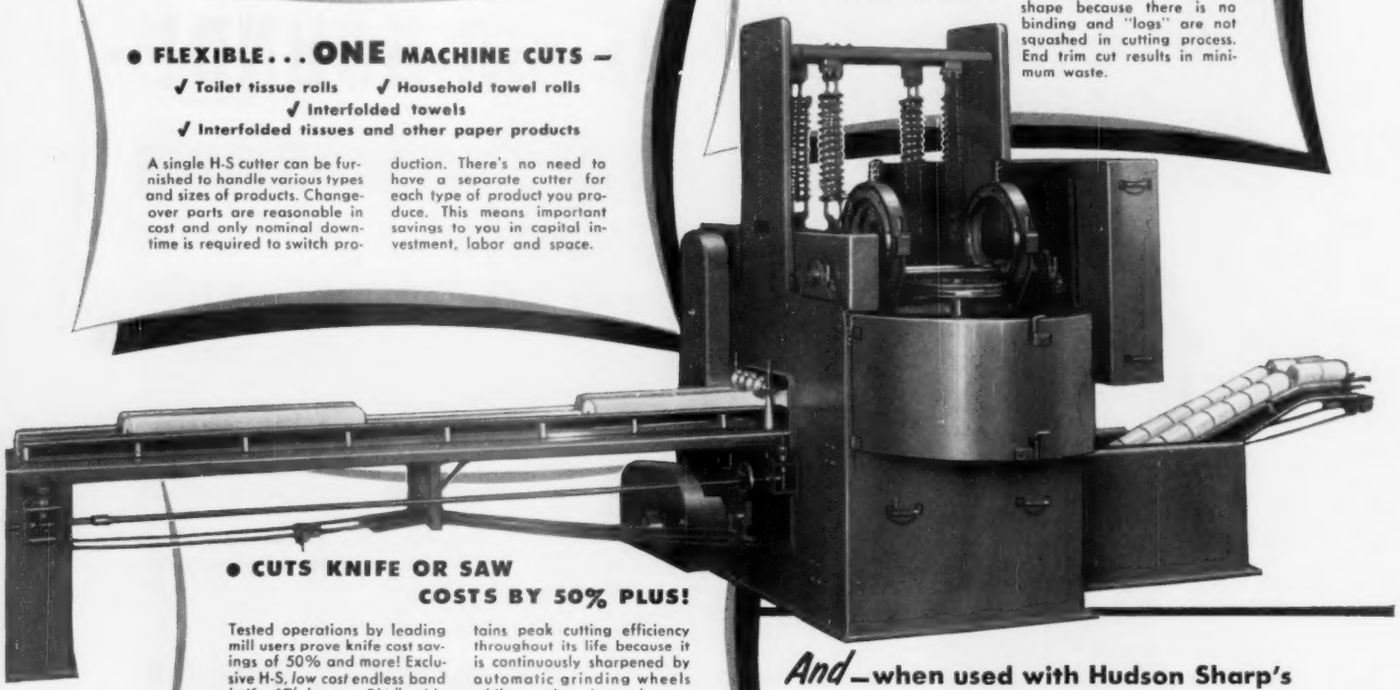
A single H-S cutter can be furnished to handle various types and sizes of products. Change-over parts are reasonable in cost and only nominal down-time is required to switch production. There's no need to have a separate cutter for each type of product you produce. This means important savings to you in capital investment, labor and space.

• CLEAN, STRAIGHT, SQUARE EDGES –

✓ Trims paper and core evenly — cleanly
✓ No crushing — no cuts on bias
✓ Minimum waste at end cut trim

High speed continuous running band knife cuts rolls or packs with clean, dust-free, non-ragged edges for complete production satisfaction. Packs retain round or square shape because there is no binding and "logs" are not squashed in cutting process. End trim cut results in minimum waste.



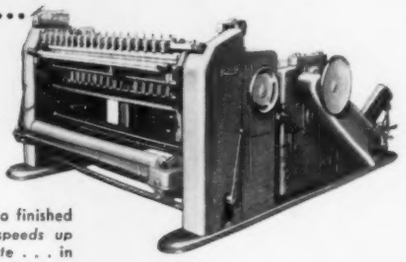
• CUTS KNIFE OR SAW COSTS BY 50% PLUS!

Tested operations by leading mill users prove knife cost savings of 50% and more! Exclusive H-S, *low cost* endless band knife 17' long x 3½" wide lasts considerably longer than conventional types. Knife maintains peak cutting efficiency throughout its life because it is continuously sharpened by automatic grinding wheels while running. *It need never be removed* until completely worn and ready for discard.

It's only natural — that Hudson Sharp should produce the "Master" of all log cutters for stepping up roll and package production with amazing new speeds. For instance, it *delivers 80 to 150 rolls or packs per minute!* — dependent upon product length. Length cuts from 4" to 12" in ½" increments can be made from log girths of 4" to 5½". Two lanes of products are fed, cut and delivered simultaneously. The H-S cutter can be used independently or in-line with automatic roll winders. Heavy-duty, sturdy construction combines simplified rotary and eccentric motion to provide smooth, dependable, trouble-free operation. Write, wire or phone collect for complete details, today!

***And*—when used with Hudson Sharp's 60-B Automatic, Continuous Running Roll Winder...**

you have the ideal high production team!



Reduce parent rolls to finished rolls at production *speeds up to 1200 ft. per minute* . . . in web widths up to 93". Automatic, progressive winding plus finished roll stripping and the most accurate sheet or measured roll count on market are just some of the standard features. Automatic core loading attachment available. Elimination of slitters for use with log cutter speeds output, reduces web breakage and minimizes down-time. Get complete facts, now!

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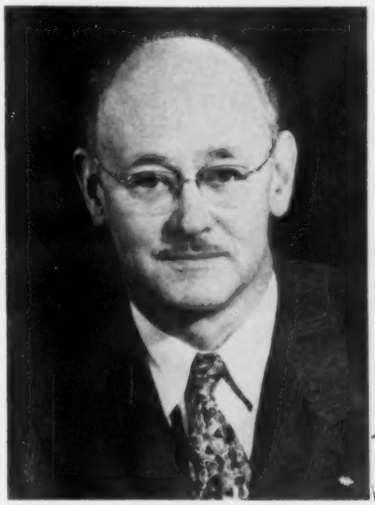

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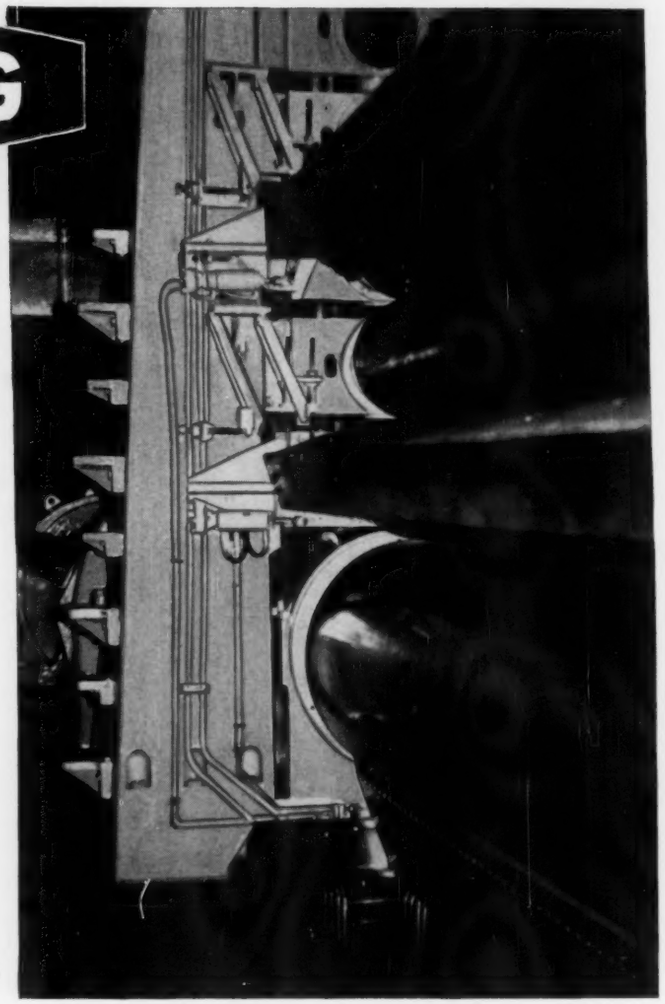

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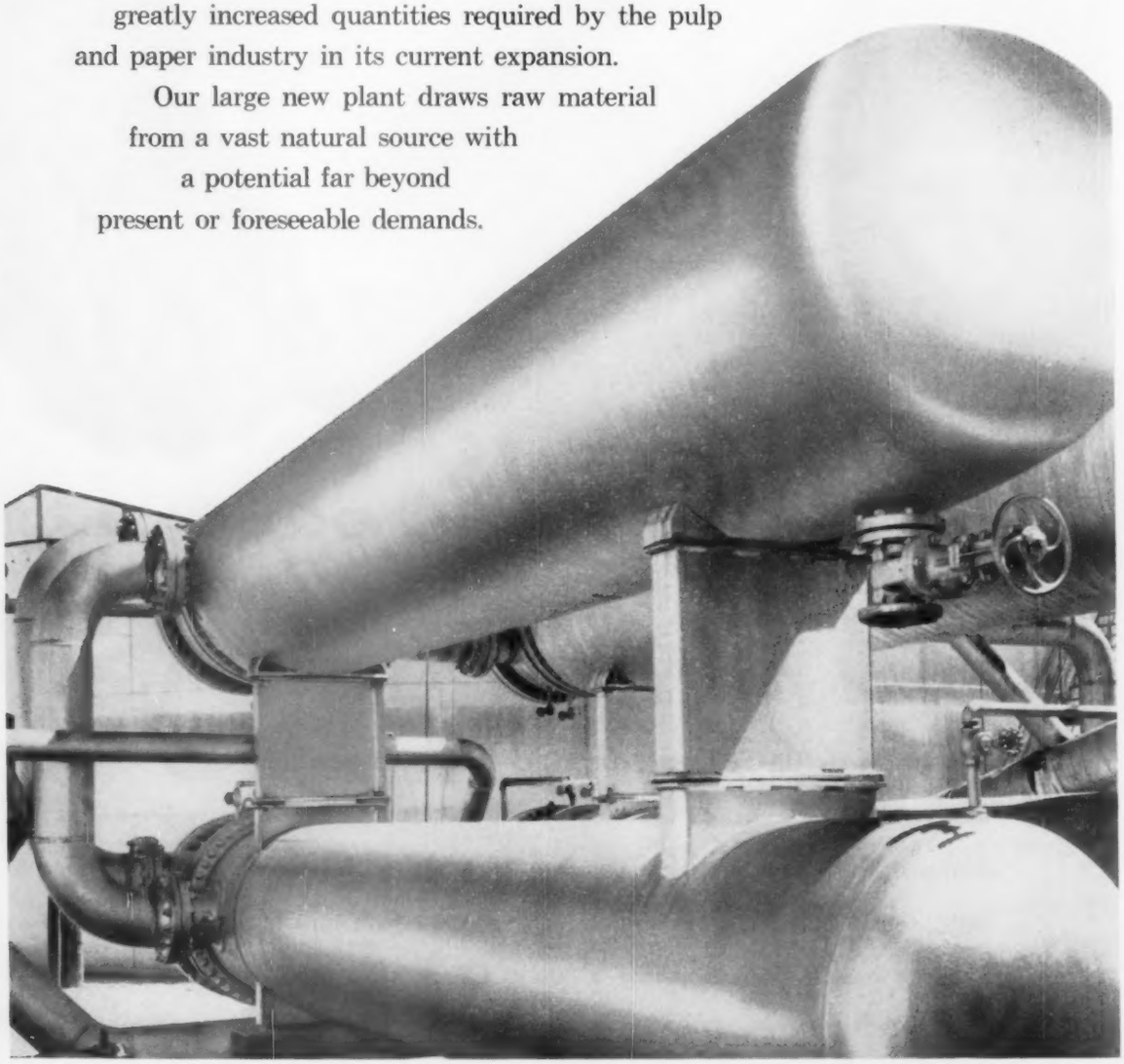

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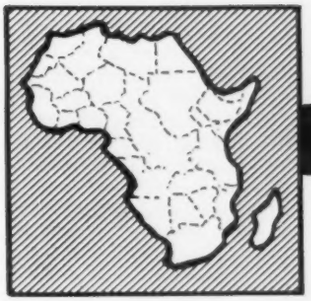


AFRICA

Investigations are on Increase

SOUTH AFRICA . . . . . .

Paper Production, Exports Grow; New Machines Start Up

Population: 13,915,000. *Per capita paper consumption:* 51 lbs.

Paper and/or board mills: 9.

Chemical woodpulp mills: 4 (including one non-integrated for rayon).

Bagasse mills: 1.

Production (short tons)	*1955*	*1956*
Paper and board	115,000	130,000
Chemical woodpulp	65,000	70,000
Straw & other pulp	10,000	15,000
Paper and board imports	220,000	205,000
Woodpulp imports	10,000	15,000

Principal paper grades made: Paperboard, book and writing, wrapping, kraft.

Principal paper imports from: U.S., Canada, U.K., Scandinavia.

Principal woodpulp imports from: Scandinavia.

BY J. E. HENDERSON

General Manager, South African Pulp and Paper Industries, Ltd.

—Johannesburg

All of our machines ran almost full time during 1956. We achieved record output both of printing and writing papers from our mill at Springs, and of kraft liner, fluting, wrapping and bag papers from our mill at Tugela in Zululand.

Arrangements are being made to install a second high-speed modern M.G. machine at our Zululand mill. This mill began operating in June 1954, using varying percentages of eucalyptus saligna woodpulp in the furnish. Pulp capacity at the plant will be expanded to meet the requirements of the new No. 2 machine.

Our firm has bought a site in Cape Town for establishment of a mill to manufacture a wide range of printing and writing papers. We are also considering modernizing the existing board plant at our Springs mill.

An Association of Pulp, Paper and Board Manufacturers of South Africa was formed last year. The secretaries of this association are the Transvaal Chamber of Industries, P.O. Box 4581, Johannesburg.

BY HANS BAARS

Pulp and Paper Mill Engineer

—Cape Town

Paper consumption in the Union of South Africa decreased slightly in 1956. The 15,000 ton increase in production was compensated for by a 15,000 ton decrease in imports, and paper exports were up. Production figures are expected to rise again in 1957 as several mills get new machines up to full production.

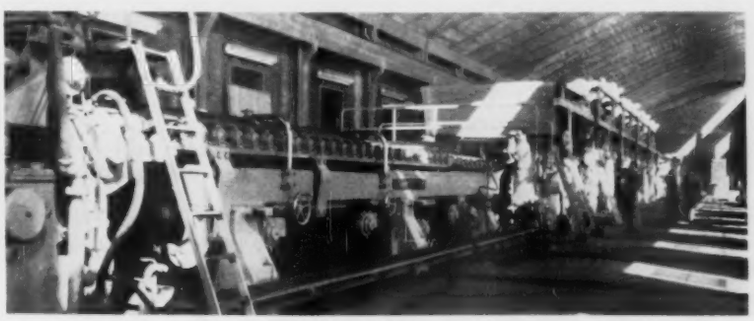
In general, South African mills not only increased production but also improved quality last year, by installing additional cleaning plants. Exports of South African paper and board both to other African countries and to overseas destination, particularly to England, are growing steadily. It hasn't been possible to estimate quantities of these exports.

South African Board Mills Ltd. started up its new felt base mill in April of this year. This plant is north of Durban on the banks of the Umgeni River, next door to the firm's board mills. A used Fourdrinier machine from England was reconditioned on site for the felt base mill. The board mills have been turning out a record production of various types of board on their two multivat machines.

Cellulose Products (Pty.) Ltd. started up a second paper machine at their tissue mill in Johannesburg. A 120-in. Yankee of the company's own design, it was built from about 80% locally made parts. It will increase the company's output to 7,000 tons per annum and in the main will use

South African Rayon Pulp Mill

Built by South African Industrial Cellulose Corp. (Pty.) Ltd. (SAICCOR) it started up in Jan. 1956 at Umkomaas, 35 miles south of Durban. Has 120 ton per day capacity.



New No. 2 Machine at Zululand Mill

This 138-in. machine started up early in 1956 at Ngoye Paper Mills in Felixtown. A neighboring sugar mill supplies bagasse. The mill makes fluting for corrugated boxes.

Zululand Mill To Add No. 2 Machine

This kraft pulp and paper mill of South African Pulp and Paper Industries Ltd., at Tugela in Zululand, started up in June 1954. It will increase pulp production to supply new machine.

materials of South African origin. Billingsfors-Langed of Sweden acquired this mill recently.

A paper machine was started up in Oct. 1955, at the S.A. Adamas Fibreboard & Paper mill at Port Elizabeth and reached its planned output of about 20 tons per day by summer of 1956. The mill makes fine quality bag, wrapping, M.G. and manila envelope papers. Adamas' board mill, which came into operation in Jan. 1953, is now producing about 275 tons per month of specialty pressed boards for the motor car, shoe and luggage industries. Management and operators of the mill came from Italy, with the exception of the technical manager, who is German.

At Estcourt in Natal, Masonite (Africa) Ltd. is in the midst of an important expansion program. Their competitors, the African Building Board Corp. at Canelands, Natal, producers of "Timberit" boards, are equally busy expanding.

South of Durban is the modern rayon pulp mill of the South African Industrial Cellulose Corp. (SAICCOR), designed and built by Snia Viscosa (Italy), Courtaulds (England) and the Industrial Development Corp. of South Africa. Courtaulds Ltd. recently bought out the Italian partners, so Courtaulds now owns two-thirds of the shares. The mill reached full production only six months after starting up the first units. The entire output is purchased by Courtaulds and Snia Viscosa. Operators were imported from Italy. Eucalyptus, from large company-owned plantations north of Durban, is used exclusively to make high grade rayon pulp.

The No. 2 machine at Ngoye Paper Mills, Felixtown, Zululand, was started up early in 1956, producing fluting for corrugated boxes. The mill uses sugar cane bagasse from a large sugar mill at the same location. The 138-in. machine has a capacity of 40 tons a day.

At Piggs Peak in Swaziland a "Kreibaum" factory makes coreboards from resin-bonded pine chips.

PLANS FOR NEWSPRINT MILL . . . G. Richdale of the American holding group, Englehard Industries, said, after a recent visit to South Africa, that a newsprint industry there is "just around the corner." The South African Forest Development Corp., a subsidiary of Engelhard, is now producing five million cubic feet of lumber annually from about 125,000 acres in northeastern Transvaal. The plan is to ship waste material from sawing operations at its mills to a site near Springs, where a newsprint mill will be erected. The mill would be added to the present paper making plant of South African Pulp and Paper Industries, a subsidiary of the British-controlled Union Corp. Expected startup date for the newsprint mill is 1960.

■

GHANA . . . . . .

New Nation Has Only Mill In All Western Africa

Population: **4,125,000.** ***Per capita paper consumption:*** **5 lbs.**
Paper mills: **1**
Paper production: **300 tons**
Imports: **Newsprint, 1,300 tons**

—Accra

The new free nation of Ghana, former British Gold Coast colony which became independent in 1957, boasts the only paper mill in whole of west Africa. This is a small operation, converting waste paper.

The former slave, Kwame Nkrumah, educated in Britain, who heads the new government, is eager to foster industries. Ghana has enormous wealth in its forests. They are practically untapped.

There will be a great deal of emphasis on education under the new government. Foreign investment will be encouraged and various steps are being taken by the new government to assist. This country is suddenly leaping from travel by foot to the airplane. And it is eager to set a good example to the whole world as a model nation.

■

LIBERIA . . . . . .

First Survey Made of Forests; Government Seeks Industry

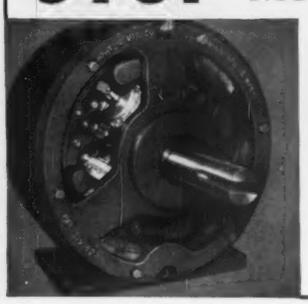
Population: **2,000,000.** ***Per capita paper consumption:*** **5 lbs.**
Paper mills: **0**
Imports: **Newsprint, 4,500 tons; imports all paper**

—Monrovia

"The biggest thing this country has to sell is opportunity." This is what E. W. "Gene" Fobes of the U.S. Forest Products Lab. at Madison, Wis., has to say about the Republic of Liberia.

On loan for 2½ years to the United Nations, he has completed a survey of the Liberian forests. "Liberia is a tremendous market for paper," he told PULP & PAPER.

STOP TELESCOPING ROLLS MUSHROOMING CORES



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Liberia is one of the richest regions in West Africa. It is a land of rolling country reminiscent of Kentucky with an area of about 43,000 sq. mi.—about the size of Ohio or Tennessee.

The country is crossed by four large rivers. Its capital, Monrovia (pop. 45,000), is less than 18 flying hours from Paris, about 30 from New York.

Under Mr. Fobes' supervision, an estimated 9 million acres of forests were mapped. Virgin timber is placed at around 140 billion bd. ft., capable of yielding 2 billion bd. ft. per year. The survey revealed about 250 species, many which would be suitable for pulping.

There is, in addition, some cut-over timber, which would probably be more suitable for pulpwood because of its size.

If it is possible to produce paper, reasons Liberia, they could sell it all, up and down the coastal area.

The climate of Liberia is moderate. In the coastal areas, it ranges from 80° daytime to around the low 70's at night. Temperature fluctuations are 90° and 60° the year round in Monrovia.

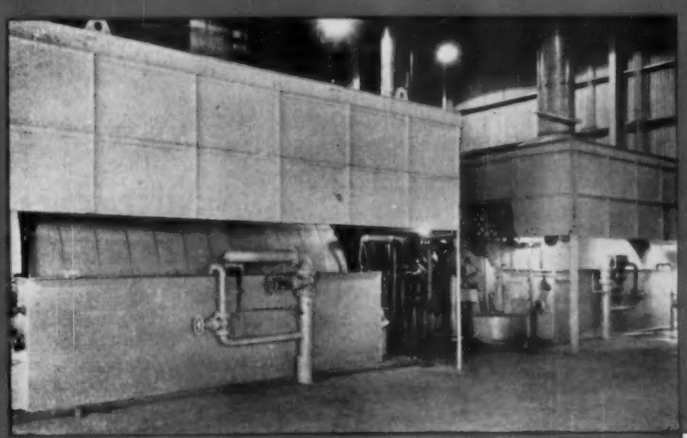
Previous to Mr. Fobes' trip, Liberia had no forestry organization. It has since established a bureau of forest conservation, laid out a national forest system and set aside some national forests. Surveys are still being made. In addition, the government has sent citizens to Michigan State College to learn forestry.

Mr. Fobes made his survey in a Piper Cub. He lived on venison and monkey.

Pointing out the need for paper, Mr. Fobes says that it is impossible to get anything in a paper bag in Liberia. Everything comes wrapped in

Foresters in Liberia

E. W. FOBES (left), Forest Products Laboratory, U.S. Forest Service, Madison, Wis., U.S.A., discusses problems with ANTHONY SAYEB (right), chief of Bureau of Forest Conservation, Liberia.



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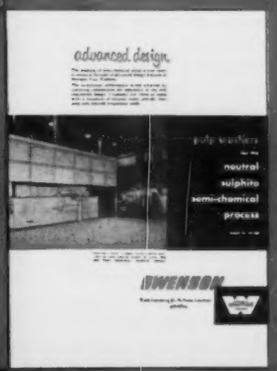

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AFRICA

newspapers. It imports newsprint. Liberian books are printed abroad.

Difficulties encountered by U.S. companies wishing to do business abroad are not found in Liberia. The currency is the U.S. dollar and the language is English.

PULP & PAPER asked Reginald Townsend, chief of the Liberian board of information, about the "investment climate." He said:

"The government is very liberal, except to Reds. It will waive or relax taxes on initial investment. It is very much interested in paper and will cooperate to a considerable extent on any venture of any kind. There have been a lot of inquiries from American businessmen about establishing pulp and paper mills in Liberia."

■

EGYPT . . . . . .

Plans New Paper Mill With Government Support

Population: 23,240,000. *Per capita paper consumption:* 11 lbs.
Paper mills: 8.
Straw or vegetable fiber mills: 1.

Production (short tons)	*1955*	*1956*
Paper	23,000	22,000
Straw & other pulp	3,000	3,000
Paper imports	82,000	80,000
Paper exports	2,700	2,000
Woodpulp imports	10,200	10,000

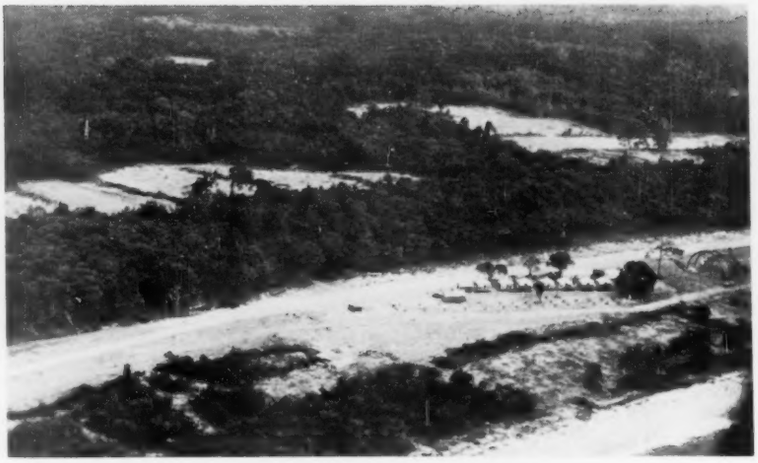
Principal paper grades made: Kraft, sulfite, book and writing, paperboard.
Principal paper imports from: Finland, Norway, Italy.
Principal woodpulp imports from: Scandinavia, Canada.
Principal paper exports to: Sudan, Saudi Arabia.

—Cairo

In spite of the Suez Canal crisis and unsettled conditions in the Middle East, Egypt is planning a major expansion of its paper industry. A paper manufacturing company with capital of $11,680,000 is being set up, to be known as RECTA.

The Egyptian State Printing Press has subscribed $861,000, state pension and insurance funds another $861,000, the Industrial Bank $545,300, the Misr Bank $574,000, a trade union insurance and savings fund $287,000 and other official bodies $430,500. The balance is to be open to public subscription.

No woodpulp is made in Egypt, but about 3,000 tons a year of straw or other vegetable fiber pulps are produced. Recently studies have been made of making modern papyrus paper, assisted by Sandy Hill Iron & Brass Works of U.S.A. Besides papyrus, cereal straws, cotton stalks, bagasse and bamboo are plentiful here. Raw material to be used by the new RECTA mill has not been announced.



Air View of Forests Along Liberian Coast, Africa

■

LIBYA . . . . . .

Eucalyptus Plantations Will Supply Pulpwood

Population: 1,500,000. *Per capita paper consumption:* 5 lbs.
Paper production: 1,000 short tons.
Paper imports: 2,250 short tons.
Principal paper imports from: United Kingdom, Italy, West Germany.

BY L. G. JOWETT
Director of Marketing and Industries, Dept. of Economics

—Tripoli

Libya has one paper mill, situated in Tripoli, which produces wrapping paper from rags, waste paper, esparto, straw, etc. Potential average monthly production is 110 short tons. All other types and qualities of paper required in Libya are imported, principally from the United Kingdom, Italy and West Germany.

The National Esparto Development Corp. of Tripolitania was founded in 1952 as a publicly owned concern with the aim of using trading profits for projects of benefit to the industries and people of Tripolitania. A current project is to extend existing state forest areas in Tripolitania with a new eucalyptus plantation. Eventual production of both eucalyptus oil and pulpwood is planned when the trees reach maturity.

Important source of revenue for Libya is the export of esparto grass to European paper mills, where it is used for fine or bond papers, mostly.

■

FRENCH WEST AFRICA . .

Pilot Plant Uses Soda-Sulfur Pulping Process

Population: 18,747,000.
Per capita paper consumption: 1.5 lbs.

	1955	*1956*
Paper and board imports (short tons)	13,575	13,776
Paper and board exports	518	87

Principal paper imports from: France, Sweden, Algeria.
Principal paper exports to: France, Belgian Congo.

—Dakar

Regie Industrielle Cellulose Coloniale has established a pulping pilot plant at Bimbresso near Abidjan on the Ivory Coast. The soda-sulfur process for pulping tropical broadleaved wood mixtures is used there and reportedly produces pulps of a considerable range of utility. It is possible that a commercial-scale mill may be constructed in the future, using this process.

All of the country's paper requirements are imported. P. Mariani, general secretary of the Chamber of Commerce of Agriculture and Industry in Dakar, reports that imports in 1956 amounted to 13,776 short tons, an increase of 200 tons over 1955. Per capita paper consumption is about 1.5 lbs.

SUDAN . . . . . .

Paper Industry Gets a Start; Government Encourages It

Population: 9,000,000. *Per capita paper consumption:* 2 lbs.
Paper and board imports: 7,000 short tons.

BY HASSAN AGABANI
Ministry of Commerce, Industry and Supply

—Khartoum

The Sudan is in the process of getting a start on establishing a paper industry. A packaging factory is under construction, with the building now complete and equipment being installed. Production will begin soon, using imported corrugated board. Meanwhile preparations are being made to make corrugated board and paper on the site from waste paper. Eventually it is hoped that a large paper mill can be built in the Sudan, which has a rich supply of raw materials. Vast areas in the south are covered with papyrus which is not used.

An attempt was made about 40 years ago to make paper from this papyrus but it was a failure. However, research work on papyrus carried out in Germany, France and Switzerland has given very good results. Some firms are interested in a project of this sort and the Sudan government is eager to encourage and assist in every possible way.

REST OF NORTH AFRICA . .

Expanding Paper Industries in Algeria, Morocco, Tunisia

Population:

Algeria	10,400,000
Morocco	8,004,000
Tunisia	3,700,000

Per capita paper consumption: 5 to 10 lbs.
Total paper production: 70,000 tons.
Exports of esparto grass to France, Spain and Great Britain for papermaking: 300,000 tons.

The Tunisian National Cellulose Co. plans to build a pulp mill at Sousse, about 100 mi. south of Tunis on the shore of the Mediterranean, and close to a belt of esparto grass which will be used as raw material. A pipeline will be built at a cost of about $3,360,000, to carry water from the Oued Elil River. After passing through the plant the water will be filtered and used for irrigation.

PRODUCTION OF ESPARTO GRASS

(in short tons)

	1954-55	*1955-56*
Algeria	187,000	160,000
Morocco	61,600	84,700
Tunisia	67,100	77,000

Gathering Esparto Grass in North Africa

Estimated esparto grass produced in Algeria, Morocco and Tunisia is 322,000 tons per year. Most of it is shipped to France and other European countries for pulping. It makes fine quality papers. Photo by Otalac, courtesy *France Actuelle*.

In Morocco, a 27,500 ton chemical pulp mill using esparto was planned. A new woodpulp mill built by La Cellulose du Maroc was due to start up in 1956 at Sidi-Yaya de Rharb, east of Port Lyautey. Eucalyptus, planted many years ago on an area of about 75,000 acres, is the raw material. The mill will make about 16,000 tons annually of cellulose and 14,000 tons of artificial fiber textiles. Three existing mills near Casablanca make 25,000 tons of paper annually of various grades, including newsprint.

An Algerian mill making 26,000 tons a year of writing and printing paper from esparto was being enlarged.

CENTRAL AFRICAN FED. . .

Southern Rhodesia Booming; Nyasaland Plan Shelved

Population: 6,900,000. *Per capita paper consumption:* 1 to 3 lbs.
Paper production: 7,000 tons.

BY HANS BAARS
Pulp and Paper Mill Engineer

—Salisbury

The liveliest news of the Central African Federation comes from Southern Rhodesia, which is in the midst of a remarkably rapid industrial development. A project to use wattle and other timber to make rayon pulp is under discussion, but no definite plans have been drawn up yet.

The territory has two paper mills, one making pressed boards and wrapping paper, the other producing paperboard on a multivat machine. Both mills use waste paper as their principal raw material.

The pressed board and wrapping paper mill, at Norton near Salisbury, has had difficulties during its first years of operation. The major problems have now been successfully overcome and the mill is working up to full capacity to cope with demand for their products, particularly suitcase fiber.

The other mill, in Umtali at the foot of the scenic Vumba mountains, makes its own groundwood pulp from locally grown pine. The variety of boards produced on their 30 ton per day machine are of good quality.

STUDY RHODESIAN RUSHES . . . Pulping studies on six species of sedges and rushes from Northern Rhodesia were carried out recently by A. E. Chittenden and D. Morton, using the sulfate process. The material tested was obtained from the Lake Bangweulu Swamps. Results indicate that the poor strength of the bleached pulp would necessitate mixing in a stronger bleached pulp such as coniferous woodpulp to make good quality writing and printing papers. Without adding an excessive proportion of stronger unbleached pulp, only very poor wrappings could be produced from the unbleached pulp.

NYASALAND PLAN DROPPED . . . A four-year-old plan to establish a paper industry in Nyasaland has been abandoned because "political imponderables made the risks excessive," according to a report from the Colonial Development Corp. A syndicate of the corporation, the Imperial Tobacco Co. and Albert E. Reed and Co., Ltd., of England, had planted 148 acres of pine trees on the Nyika Plateau.

BELGIAN CONGO . . . . .

Study Possibility of Pulp Mill on Lake Leopold II

Population: **16,800,000.** ***Per capita paper consumption:*** **3 lbs.**

	1955	1956
Paper & paperboard imports	**22,363**	**25,261**

Principal paper imports from: **Belgium, Finland, Austria.**

—Leopoldville

C. H. Derbecourt, director and chief of service, Ministry of Commerce and Industry, reports that several projects for pulp and paper mills in the Belgian Congo are under consideration but no definite information as to when and where they will be built is available at present. Belgian Congo, including Ruanda-Urundi, imports its entire supply of paper and paperboard.

The country has an immense forest of about 50,000 sq. mi., or 55% of the entire area. The Belgian Ministry of Colonies and the Central Government are anxious to exploit these enormous wood resources. Representatives of Belgium's paper mills, colonial officials and financiers established the Cellulose Syndicate for the Congo (Celluco) in 1952 to study the problems involved.

The syndicate chose as operational base the region of Lake Leopold II, 250 mi. northwest of Leopoldville and in direct river contact with it. A forest reserve of about 674,000 acres was allocated to the syndicate, with possibility of adding the inhabited areas bordering the river connecting the lake to Leopoldville. The forests are equatorial—luxurious and, unfortunately, heterogeneous.

It was decided to make bleached pulp for export and some unbleached for local consumption. Studies showed that, using a mixture of woods, it is possible to make a pulp by a sodium sulfate method with overall yield of 47%. The color of the pulp obtained is that of a normal kraft. It must be treated longer than ordinary pulp to reach optimum strength, but could be used to make kraft paper if the paper machine were modified somewhat. The unbleached pulp is bleachable, but studies of bleaching are still in progress so no results are available.

When the study is completed it will be decided whether to start building a pulp mill there at once or to wait until there is an appreciable increase in world demand for market pulp.

ETHIOPIA . . . . . .

Paper Industry Undeveloped

Population: **19,500,000.** ***Per capita paper consumption:*** **0.5 lbs.**
Paper mills: **2.**
Paper production: **220 short tons.**
Paperboard production: **17 short tons.**
Paper and board imports: **1,320 short tons.**
Principal paper imports from: **Italy, United Kingdom, Sweden.**

—Addis Ababa

Ethiopia's economy is mainly agricultural but industrial resources are potentially great. The International Bank is now helping conduct a survey of the country's hydroelectric power, which is vast. There are known deposits of coal and tests are in progress for petroleum.

Ethiopia's paper industry is almost non-existent. There are two small paper mills which produce about 220 short tons of wallpaper and 17 tons of cardboard annually. Annual per capita paper consumption is as low as any place in the world, being less than one pound. Last year about 1,320 tons of paper was imported, mainly from Italy, United Kingdom and Sweden. These statistics were supplied to PULP & PAPER by the statistician of the Ministry of Commerce & Industry.

REST OF AFRICA . . . . .

Signs of Light Are Beginning to Show Up in Darkest Africa

Population: **About 70,000,000.**
Per capita paper consumption: **1 lb.**
Paper production: **5,000 short tons.**
Includes British West Africa, British East Africa, Mozambique, Angola, French Equatorial Africa, Somaliland.

BY HANS BAARS
Pulp and Paper Mill Engineer
—Lourenco Marques, Mozambique

A newly formed company, Fabrica de Polpa e Papel Mocambique, at Lourenco Marques, hopes to build a pulp and paper mill near Beira with the assistance of a British-American firm of experts. The initial capital would be about $3,000,000. As paper consumption in the colony is very small, most of the production would be for export.

There is a small paper mill in Angola (Portuguese West Africa) which makes a limited quantity of paper for bags and wrapping.

A pulp mill at Lindi, southern Tanganyika, was reported to have started up recently. It uses baobab or monkey bread tree, by a process David Oberstein of Cellulose Fibre Ltd., Tanganyika, developed.

In Kenya, a pulp and paper mill at Mombasa was scheduled to begin operations under the direction of A. S. Columbusemballage, a Danish firm which makes corrugated boxes and packaging materials in 15 plants all over the world. It has had a box plant in Mombasa since 1951.

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NEW ZEALAND . . . . . .

Industry Booms "Down Under"; Creative Forestry Pays Off

Population: **2,180,000.** ***Per capita paper consumption:*** **141 lbs.**
Pulp paper mills: **5**
Woodpulp mills: **3 (1 under construction)**

Production (short tons)	***1955***	***1956***
Paper and board	**64,264**	**121,262**
Chemical woodpulp	**68,800**	**129,300**
Groundwood pulp	**42,500**	**85,000**
Paper and board imports	**88,392**	**63,989**
Paper and board exports	**744**	**31,120**
Woodpulp imports	**5,669**	**2,980**
Woodpulp exports	**30,622**	**52,447**

Principal paper grades made: **Kraft, board, tissue, newsprint**
Principal paper imports from: **Canada, United Kingdom**
Principal pulp imports from: **Sweden**
Principal pulp exports to: **Australia, United Kingdom**
Principal paper exports to: **Australia**

—Wellington

The past year saw dramatic increases in all phases of New Zealand's pulp and paper industry. Production of paper, board and woodpulp were all nearly doubled, woodpulp exports increased by two-thirds, and paper exports rose from 744 tons in 1955 to 31,120 tons in 1956. Reports Alex R. Entrican, director of Forestry, New Zealand Forest Service.

Caxton Paper Mills, Ltd., making tissue from purchased pulp, and Taxman Pulp & Paper Co., Ltd., are newcomers in the Bay of Plenty area, North Island, says Mr. Entrican.

Tasman P&P was established to use the harvest from the vast Kaingaroa State Forest in the Bay of Plenty region. Fifty years ago the forest didn't exist—the area was covered with scrub growth barely managing to survive in the volcanic soil. Restrictions on cutting, reforestation with trees from other countries which thrive on New Zealand's soil (pines from California grow four times as fast here), and conservation measures gave the land a new resource and a new forest industry.

The Tasman mill, largest single industrial plant ever established in New Zealand, began producing newsprint, sulfate pulp and sawn timber in 1955. During its first year of operation, 39,000 tons of newsprint were turned out by the Walmsley No. 1 machine.

NEW ZEALAND—WOODPULP
(in short tons)

	Production		*Total*	*Consumption*
	Mechanical	*Chemical*	*Imports*	*Paper and Board Mills*
1940	6,469	—	7,799	14,154
1950	26,085	—	10,558	36,191
1951	27,941	—	10,000	37,000
1952	29,887	—	10,400	39,753
1953	30,242	8,303°	10,353	43,450
1954	33,100	48,388	5,882	64,390
1955	42,500	68,762	5,669	71,500
1956	85,000	129,274	2,980	140,000

°First chemical pulp made in 1953.

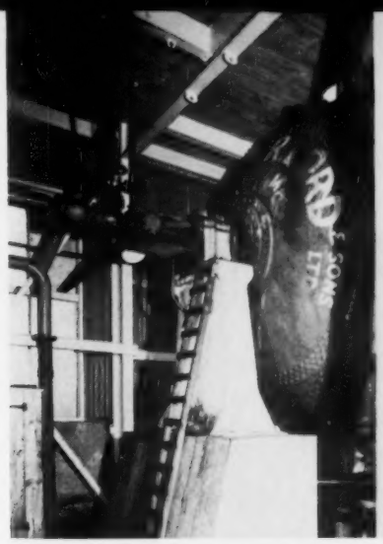
When the machine is in full production about 50,000 tons of newsprint a year will be exported to Australia and between 25,000 and 30,000 tons will be taken by New Zealand publishers. The firm now plans to install a second newsprint machine at a cost of $5,600,000. At full capacity, annual output of unbleached sulfate pulp will be 37,000 tons.

An interesting use of natural resources at Tasman is the harnessing of geothermal steam, which has been tapped by sinking bores as deep as 1,500 ft. Fletcher-Bechtel-Raymond, consultants for the firm, are studying the potentialities of this steam for power generation. A grid of eight steam wells has been drilled near the mill and now yields a steam output over 350,000 lb. per hr. at 100 psi. A steam line connects timber drying kilns with a well, to gain experience in the use of natural steam.

N.Z. FOREST PRODUCTS EXPANDS . . . New Zealand Forest Products Ltd.'s mill at Kinleith, 140 mi. south of Auckland, is planning to install a new paper machine to raise kraft paper output to 50,000 tons annually. Sulfate pulp production has been increased to 65,000 tons annually, and installation of further plants will bring it up to 100,000 tons. Fiber building board output will rise to 115

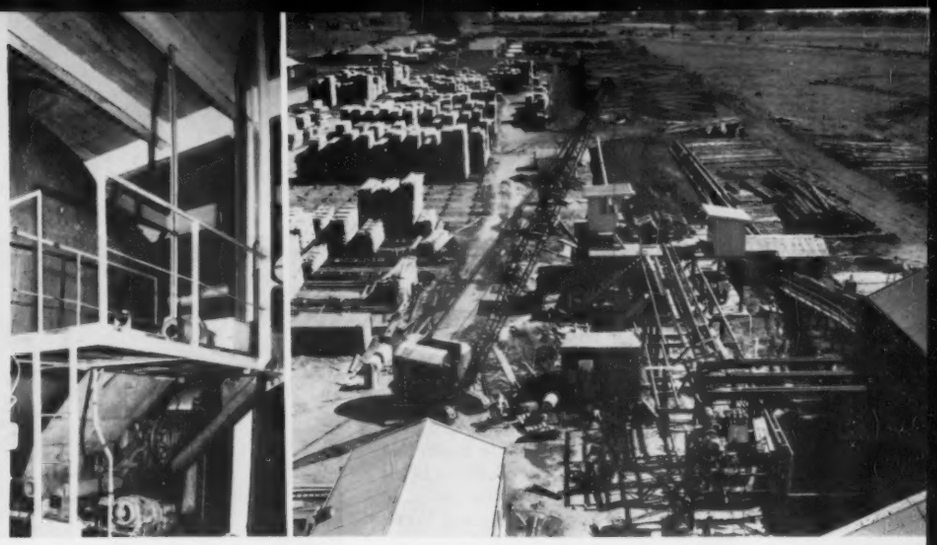
This Used To Be a Wasteland

Stand of Pinus Laricio (Corsican pine) in Kaingaroa Forest was planted in 1916 with 4 ft. by 4 ft. spacing and has been thinned without extraction to 250 stems per acre. With Pinus Radiata, introduced about 35 years ago from the U.S., this exotic timber supplies New Zealand's growing pulp and paper industry. Photo by J. H. Johns, New Zealand Forest Service.



New Zealand's Only Spherical Digester

A new semi-chemical pulp mill at Whakatane Board Mills Ltd. started up in Sept. 1956. Built by R. Lord & Sons Ltd., England, the digester has a diameter of 14 ft.



Debarks Logs up to 40 in. Diameter

This log barker at Whakatane Board Mills Ltd., made by Nicholson Mfg. Co., Vancouver, Canada, and Auburn, Wash., U.S.A., is New Zealand's only pneumatic mechanical debarker.

million sq. ft. yearly when a new plant from the U.S.A. is installed.

Installation of continuous Kamyr digesters, the first in New Zealand, was completed last year. Pulp for export is put through a Flakt dryer and the remaining pulp is piped to the paper mill. A bleaching unit will be put into operation next year.

SEMI-CHEMICAL MILL STARTS . . . Whakatane Board Mills Ltd. began operating a new semi-chemical pulp mill in Sept. 1956. It has an output of 4,000 tons annually, using chips from sawmill waste. A Black-Clawson (U.S.A.) paperboard machine was started up in 1955.

F. R. Combes, chief engineer at Whakatane, reports that regrinding the mill's M.G. cylinder by using abrasive cloth belts instead of stones was a great success. Grinding and polishing time was cut to about one quarter and a much better finish was obtained.

APPITA MEETS AT ROTORUA . . . The growing importance of New Zealand's pulp and paper industry was pointed out by the 11th General Conference of the Australian Pulp and Paper Industry Technical Assn., held at Rotorua, N.Z., this spring. Founded in Melbourne in Mar. 1947, APPITA's register of 600 members includes pulp and paper experts from countries all over the world.

NEW ZEALAND—PAPER PRODUCTION

(in short tons)

	Newsprint	*Other Paper*	*Paperboard*	*Fiberboard*
1940	—	6,878	7,282	—
1945	—	6,969	15,712	8,000
1950	—	8,295	19,052	16,200
1951	—	7,474	18,574	20,121
1952	—	7,722	18,386	20,906
1953	—	13,042	17,616	21,642
1954	—	25,193	19,912	23,062
1955	*10,008	31,604	22,652	23,901
1956	59,024	34,539	27,700	23,985

*First newsprint made in 1955.

AUSTRALIA . . . . . .

Fine Paper Mill Starts Up, Other Mills Up Production

Population: 9,533,334 *Per capita paper consumption:* 156 lbs.
Paper and board mills: 16. *Pulp mills:* 5.

Production (short tons)	*1955*	*1956*
Paper and board	366,000	425,600
Woodpulp	176,000	207,200
Paperboard	170,000	190,400
Newsprint	77,000	88,480
Paper (other than newsprint)	119,000	146,720
Paper and paperboard imports (combined)	372,847	325,622
Paper and paperboard exports (combined)	2,524	2,800
Woodpulp imports	91,789	91,200
Woodpulp exports	—	60

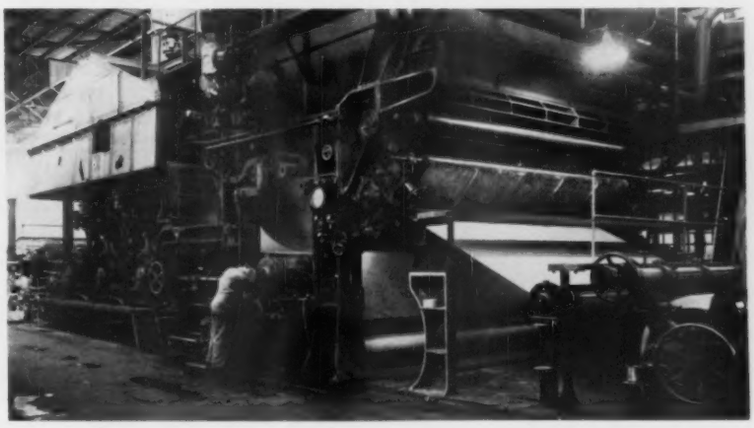
Principal paper imports from: United Kingdom, Sweden, Norway.
Principal pulp imports from: Sweden, New Zealand, Finland.
Principal paper exports to: New Zealand.

—Melbourne

Australia increased her production of paper and board by 19% during 1956, to 425,600 tons. Pulp production was up 18%, from 176,000 tons in 1955 to 207,200 last year.

Major event was startup of Shoalhaven Paper Mills Pty. Ltd.'s new mill at Nowra, New South Wales, about 100 mi. from Sydney. In 1952 the Wiggins Teape Group and William Nash Ltd., both of England, decided to establish a two-machine mill in Australia, to make fine and industrial papers. The following year a site on the north bank of the Shoalhaven River was selected, and by March 1954 the concrete floor for the machine house was poured. The first machine began making paper early in 1956, followed by No. 2 machine a few months later. Plant, capital (about $4,200,000) and employes were all imported from the United Kingdom.

No. 1 machine was modernized and transferred from the William Nash Ltd. mill at St. Pauls Cray, Kent. It makes 63 in. T.S. rag content paper. Wiggins Teape supplied the larger and faster No. 2 machine.



Turning Out M.G. Paper at Australian Mill

Australian Paper Manufacturers Ltd. has mills at Melbourne, Fairfield, Broadford, Maryvale and Botany. This drying cylinder at the Fairfield, Victoria, mill weighs 54 tons and makes M.G. papers from 12 to 56 lbs. double crown, 168 in. wide.

Ninety-two in. wide, it was assembled at Teape's Stoneywood mill, much from surplus machine parts from their other mills, and makes high grade bond offset printing, glazed imitation parchment and other grades. Total capacity is 8,960 tons per year.

Most other mills in Australia have been producing close to full capacity. One of the largest firms is Australian Paper Manufacturers Ltd. (APM) which operates five paper mills in Victoria, New South Wales and Western Australia. A sixth mill is under construction at Petrie, Queensland. Main products of all the mills are wrapping paper and paperboard.

Associated Pulp and Paper Mills Ltd. (APPM) has a mill at Burnie on the island of Tasmania, off the southeastern coast of Australia. Writing and printing papers, glassine, vegetable parchment and greaseproof papers are made here. The Burnie mill also supplies base papers to be coated and processed at Ballarat. Another Tasmanian mill, Australian Newsprint Mills Ltd. (ANM) at Boyer, near Hobart, is the only newsprint manufacturer in Australia, with a capacity of about 90,000 tons a year.

IMPORTS STILL HIGH . . . In spite of a decrease last year, pulp and paper imports are still considered to be too high, and there is a continued effort to lower them. The main source of pulp is native eucalyptus, long thought to be unsatisfactory for making pulp. Mixed with long fibered softwood pulp from Scandinavia and North America, it makes a good grade paper. Meanwhile, softwoods are being developed and planted in Australia, to supplement and eventually eliminate imported softwood pulp.

How They Grow Pine in Australia

This is a stand of loblolly pine, nine years old, grown in a single parent progeny test in Queensland, Australia. The country is attempting to become less dependent on imports of long-fibered pulps. Photo by Queensland Forest Service.

PAPER SCHOOL AT MELBOURNE . . . The Royal Melbourne Technical College is extending its pulp and paper technology course, started in 1956, to a three-year curriculum that will conform with the standards of the London City and Guilds. Primarily designed for people with practical operating experience, the course consists of one night lecture each week. It covers the history of papermaking, raw materials, pulps, the Fourdrinier paper machine, cylinder machines, manufacture of M.G. paper, finishing processes, water treatment and recov-

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AUSTRALIA—GENERAL

	No. of Mills	No. of Employes	Value of Materials (In Thousands of Dollars)	Value of Output
1951	14	6,336	$23,300	$37,800
1952	14	6,750	$24,000	$42,000
1953	16	7,237	$35,000	$70,000

(Latest available)

AUSTRALIA—PAPER

(in short tons)

	Production		Total All Paper & Board
	Newsprint	Board	
1946-47	31,734	76,563	185,870
1947-48	31,335	83,213	192,320
1948-49	30,260	85,307	193,460
1949-50	30,472	99,519	205,196
1950-51	33,000	103,000	220,000
1951-52	33,000	110,000	235,000
1952-53	70,000	112,000	270,000
1953-54	70,000	120,000	330,000
1954-55	77,000	170,000	366,000
1955-56	88,480	190,400	425,600

AUSTRALIA—WOODPULP

(in thousands of short tons)

	Chemical		Mechanical	
	Prod.	Imports	Prod.	Imports
1949	63	44	38	3
1950	68	37	38	1
1951	75	46	40	2
1952	77	53	47	6
1953	70	28	40	1.5
1954	90	48	64	5
1955	110	70	66	4
1956	136	69	71	4

Source: Australian government, U. S. Pulp Producers Assn., Canadian P & P Assn.

ery systems, steam generation and quality control tests. It also offers a correspondence course.

AUSTRALIA'S INDUSTRY ASS'N. . . . The Australian Pulp & Paper Industry Technical Association (APPITA) was founded in Melbourne in 1947 and now has 600 members, a number of them from New Zealand. It has local sections at Boyer, Burnie, Maryvale, Melbourne and Sydney. A general conference is held yearly and was at Rotorua, New Zealand, this year.

PULP & PAPER is indebted to C. V. Gray, assistant secretary, Department of Trade Industries Div., and to Mel Pratt, editor, News and Information Bureau, for information about the industry in Australia.

New Philippine Bamboo Pulp

Philippine "boho" bamboo pulp being processed in a small test beater is examined by GEORGE A. ADAMSON (left), Los Angeles, Calif., whose company will build bamboo paper mill in Philippines, and by GEORGE H. CHIDESTER (right) chief, pulp and paper division, U. S. Forest Products Laboratory.

■

PHILIPPINES . . . . . .

Bamboo Pulp and Paper Mill To Be Built on Bataan

Population: **22,056,100.** ***Per capita paper consumption:*** **8 lbs.**
Paper and board mills: 5
Bagasse pulp mill: 1
Production
In short tons or dollar value:

	1955	1956
Paper & paperboard	16,000	20,000
Bagasse pulp	4,917	5,000
Woodpulp imports	1,577	4,035
Paper imports (value)	$10,322,000	$15,000,000

Principal grades made: **Kraft papers, book and writing, paperboard, tissue**
Principal paper imports from: **U. S. A., Canada, Spain**
Principal pulp imports from: **U. S. A., Sweden, Canada**

—Manila

On the peninsula of Bataan, scene of the tragic Death March of American and Filipino prisoners captured by Japanese invaders early in World War II, the first mill to use bamboo as a pulping material will be built.

This project, reported first in PULP & PAPER'S 1956 World Review, has advanced to the point where successful laboratory tests at the U.S. Forest Products Laboratory, Madison, Wis., U.S.A., have encouraged the Adamson brothers, Alexander and George, to proceed. Machinery will be procured in U.S., Britain and Sweden.

A species of bamboo called "boho" —technically Schizostachyum Lumampao—will be used.

Alexander A. Adamson is president of Philippine Paper Mills, Inc., Manila, and George A. Adamson, Los Angeles, is technical director. Their new affiliated company is Bataan Pulp & Paper Mills.

Only one other mill in the Philippines now makes pulp—Celulosa de Filipinas—from cane bagasse, using the Argentine Pomilio continuous chlorine gas process. It is at Bais, making writing, book and other grades on a 90-in. Fourdrinier and Yankee.

Tests in U.S.A. for the Adamsons used a sulfate process on bamboo chips prepared by a prehydrolysis soaking. It is considered possible the

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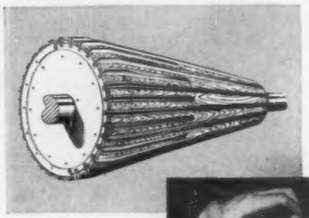

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THE PHILIPPINES—IMPORTS

(In short tons)

	Newsprint	Fine & Book Paper	Wood Pulp	All Papers and Woodpulp
1949	30,151	2,564	221	58,796
1950	24,842	4,646	357	61,552
1951	32,046	9,812	510	71,400
1952	16,146	10,561	615	58,982
1953	24,679	8,753	811	51,000
1954	27,000	10,000	1,431	60,000
1955	28,580	14,654	1,577	86,084
1956	33,000	16,000	4,035	100,000

pre-treatment and extra digester may not be necessary.

REPORTS ON OTHER MILLS . . . Four paper mills and one pulp and paper mill now produce a total of about 70 tons of paper a day. This is insufficient to supply even the low 8 lb. per capita use in the islands.

New paper mills in the last year were Manila Paper Mills, making wrapping out of kraft waste paper and imported pulp, and Eastern Paper Mills, making tissue with imported pulp.

There were no new developments in reported plans of Everett (Wash., U.S.A.) Plywood & Door Corp., a worker-owned company, to build a pulp mill and other wood products plants in the Philippines, nor in the long-discussed similar plans of Col. Andres Soriano, head of the Soriano mining and other enterprises, and San Miguel Brewery to jointly build a 200-ton kraft mill on Bislig Bay, Mindanao.

■

HAWAII . . . . . .

Bagasse Study Continues

Population: **510,000.** ***Per capita paper consumption:*** **166 lbs.**
Paper production: **40,000 tons (building board).** ***Bagasse pulp:*** **40,000 tons.**
Paper imports: **52,000 tons**
Principal paper imports from: **U.S., Canada**

—Honolulu

Hawaii's sugar industry, with an annual production of about 1,100,000 tons, provides as a by-product large amounts of bagasse, an excellent papermaking material. For over five years the Hawaiian Sugar Planters' Assn. (HSPA) has been studying the possibility of developing a market pulp and/or paperboard industry in Hawaii, based on the use of bagasse as raw material.

Bagasse now provides an economical fuel for plantation factories. Using it to make pulp or board would require importing other fuels, possibly at such expense that this use of it would be uneconomical. One million tons of dry bagasse is produced on the island each year. If separated, it could yield 600,000 tons of fiber and 400,000 tons of pith.

G. W. Alijan is heading these studies, on a "loan-out" basis from C&H Sugar Refining Corp., San Francisco. He acts under the technical guidance of Dr. L. D. Beaver, director of HSPA's experiment station. T. J. Nelson is Mr. Alijan's assistant, and S. B. Knapp, a paper technologist, does research in collaboration with mainland U.S. paper companies.

There is one board mill at Hilo (125 tons a day) using bagasse, owned and operated by Flintkote Co. (U.S.A.).

■

INDONESIA . . . . . .

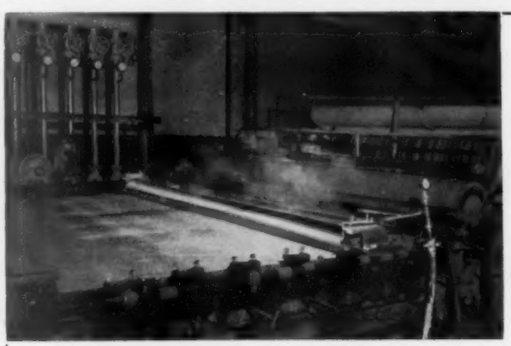
Forest Resources Undeveloped

Population: **82,450,000.** ***Per capita paper consumption:*** **3.5 lbs.**
Pulp and paper mills: **2**
Paper production: **7,000 tons**

—Jakarta

The government is studying several plans for new large mills but no action has been taken.

Two small mills, using rice straw, add to the islands' 3,000 tons of imported pulp, to produce about 7,000 tons a year of pretty good writing paper. Tropical rain forests, hardwoods and fast growing conifers, as well as bamboo, are abundant.



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  U. S. patent 264 2314
- **Changes Water Viscosity**

THUS FREEING WET MAT

- **Allowing Speed Increase**

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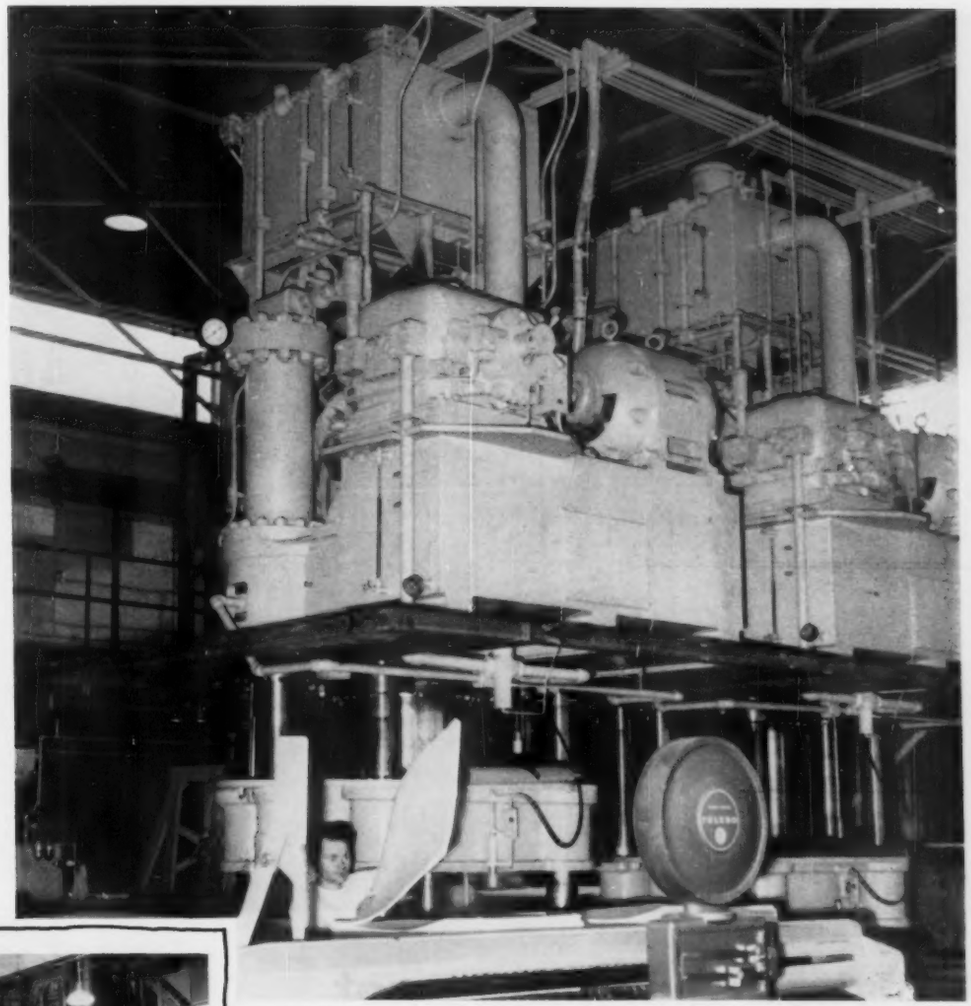
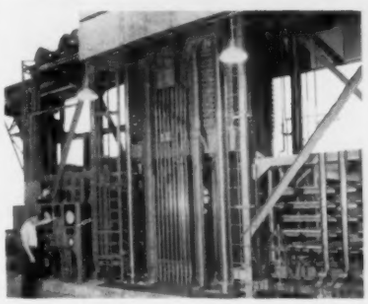


Washington presses installed in new Weyerhaeuser mill

Weyerhaeuser Timber Co. now has two pulp mills equipped with Washington pulp baling presses. The newest sulfite mill, at Cosmopolis, Washington, duplicates the twin press installation in the kraft mill at Everett, Washington. All four presses are 1,000-ton high speed downward-acting hydraulic type with automatic cycle control.

Many major producers of kraft and dissolving pulp use Washington pulp baling presses. They have repeated with Washington presses in new or expanded mills. This industry-wide acceptance attests to the efficiency and high production records of Washington press equipment.



Producers of hardboard and particle board also turn to Washington Iron Works for steam platen presses, together with automatic loading and unloading equipment.

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American Parboard Corp.
Carolina Forest Products Inc.
Columbia Hardbord Co.
Georgia-Pacific Corp.
Gray Products Company
Johns-Manville Products Corp.
Masonite Corp. of Australia Ltd.
Poinsett Lumber & Manufacturing Co.
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For complete information on presses and accessory equipment for pulp baling or hardboard, particle board and plywood manufacture, write to Washington Iron Works, 1500 Sixth South, Seattle 4, Wash.

1500 6th Ave. South, Seattle 4, Wash. *Since-1882* ELliot 1292

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The complete story is in our Bulletin 1700. May we send it to you? Contact your nearby Louis Allis District Office or write The Louis Allis Company, 444 East Stewart Street, Milwaukee 1, Wisconsin.

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Assn. headquarters at 122 E. 42nd St., New York 17, N.Y. *Exec. Secy.-Treas.*, R. E. O'CONNOR.

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JOHN R. KENNEDY (photo) *President*. He is President of Federal Paper Board Co., Inc., Bogota, N.J.

Assn. headquarters at 80 E. Jackson Blvd., Chicago 4, Ill. *Exec. Mgr.*, ALBERT W. LUHRS.

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WARD D. HARRISON (photo), *President*. He is Vice-President of Riegel Paper Corp., New York, N.Y.

Assn. headquarters at 155 E. 44th St., New York 17, N.Y. *Secy-Treas.*, R. G. MacDONALD.

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L. A. WHITTLE (photo), *President*. He is Woodlands Div. Mgr., Brunswick Pulp and Paper Co., Brunswick, Ga.

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JAMES L. MADDEN (photo), *Chairman*. He is Vice President of Scott Paper Co., Chester, Pa.

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A. G. WAKEMAN (photo), *President*. He is president of Coosa River Newsprint Co., Coosa Pines, Ala.

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R. C. BARIENBROCK (photo), *President*. He is Director, Wood Procurement, The Mead Corp., Chillicothe, Ohio.

Assn. headquarters at 1224 Peachtree St., N.E., Atlanta 9, Ga. *Gen. Mgr.*, HENRY J. MALSBERGER.

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SAM J. ROBINSON (photo), *President*. He is Vice Pres. & Gen. Mgr., Publishers' Paper Co., Oregon City, Ore.

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Assn. headquarters at 1043 E. South River St., P.O. Box 436, Appleton, Wis. *Tech. Dir.*, A. J. WILEY.

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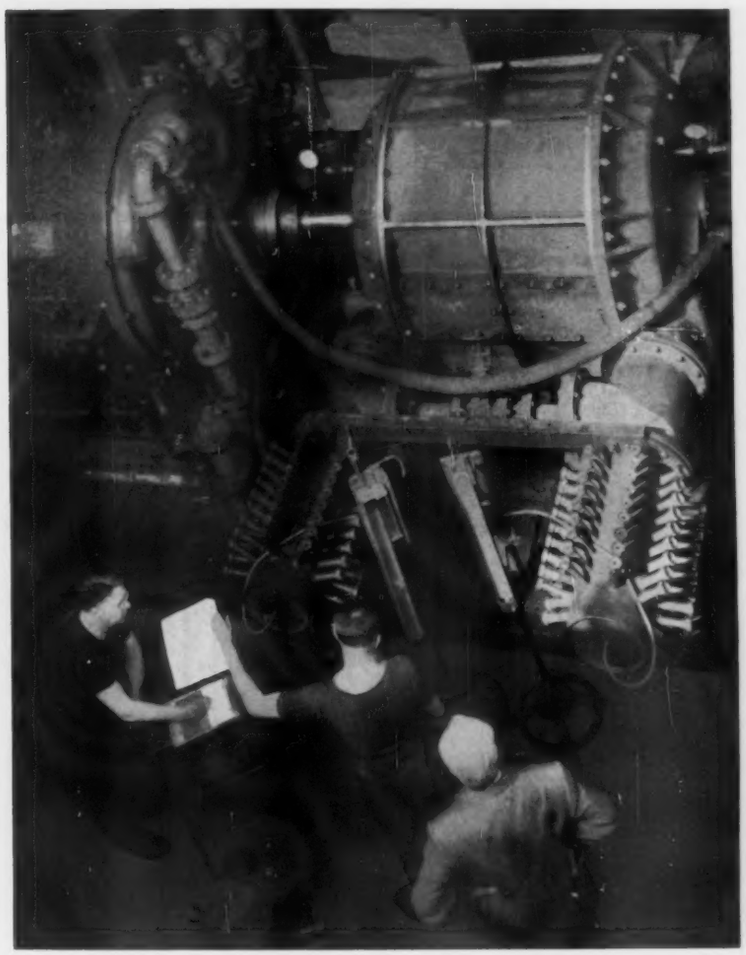

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Council headquarters, 425 N. Michigan, Chicago, 11, Ill.

National Safety Council, Wood Products Section

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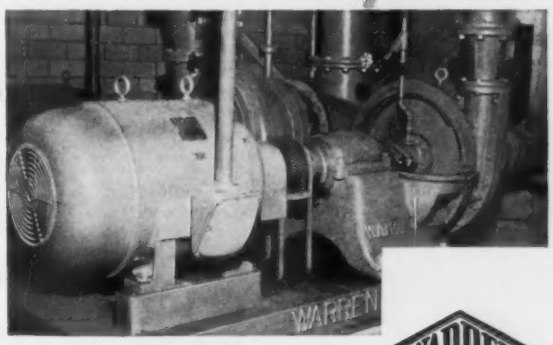

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State University of New York, College of Forestry

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Western Michigan University Paper Technology Dept.

DR. ALFRED H. NADELMAN (photo), *Head of Dept.,* Kalamazoo, Mich.

North Carolina State College, School of Forestry

PROF. C. EARL LIBBY (photo), *Head of Dept. of Papermaking,* Raleigh, N. C.

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JAMES P. CASEY (photo), *President*. He is Director of Applications Research, A. E. Staley Mfg. Co., Decatur, Ill. *Secy.-Treas.*, J. C. BARTHEL.

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MAXWELL MacLAGGAN (photo), *Chm. of Exec. Council*. He is Divisional Woods Manager, Lakehead Woods Div., Abitibi Power and Paper Co. Ltd., Port Arthur, Ont.

Section headquarters at 2280 Sun Life Bldg., Montreal, Que. *Manager*, W. A. E. PEPLER.

Pulp & Paper Research Institute of Canada

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Institute headquarters, 3420 University St., Montreal, Que.

IN CANADA

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Section headquarters at 2280 Sun Life Bldg., Montreal, Que. *Exec. Secy.*, DOUGLAS JONES

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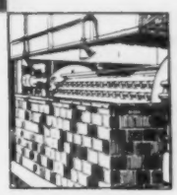

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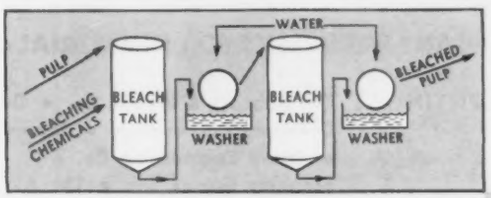

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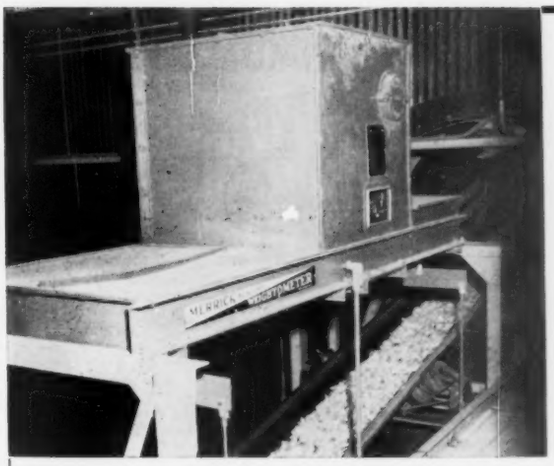

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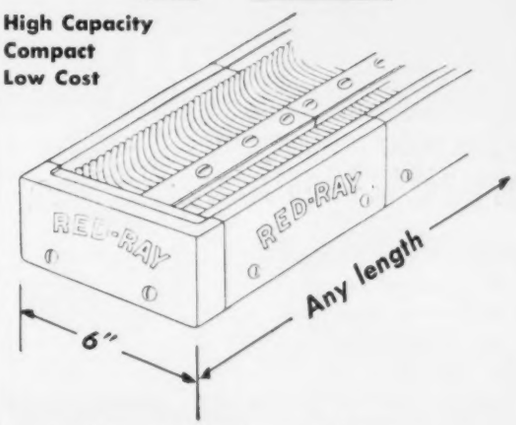

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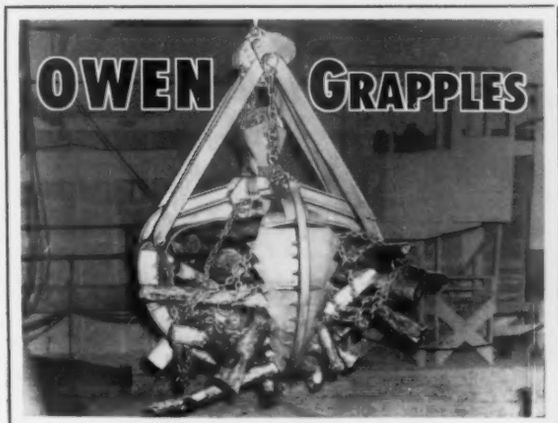

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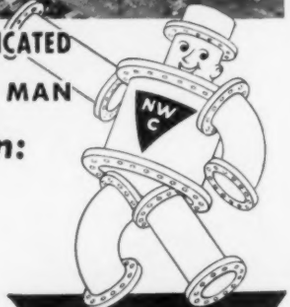

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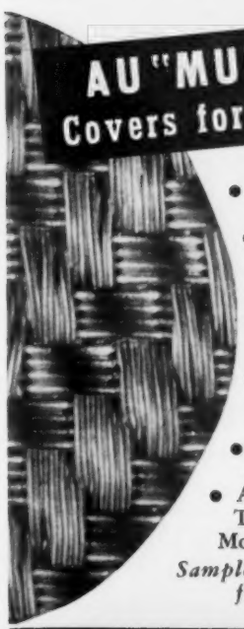

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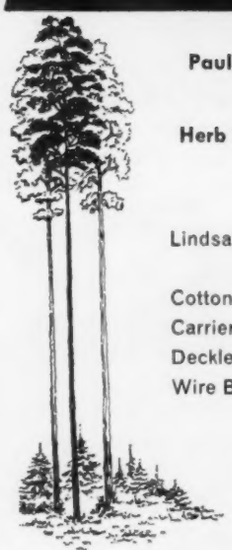

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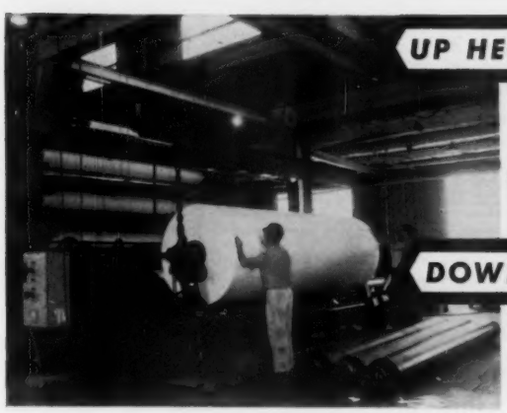

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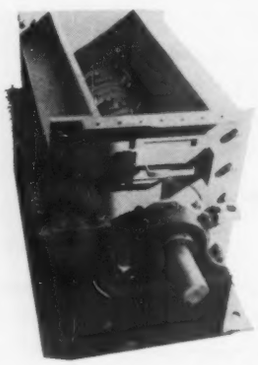

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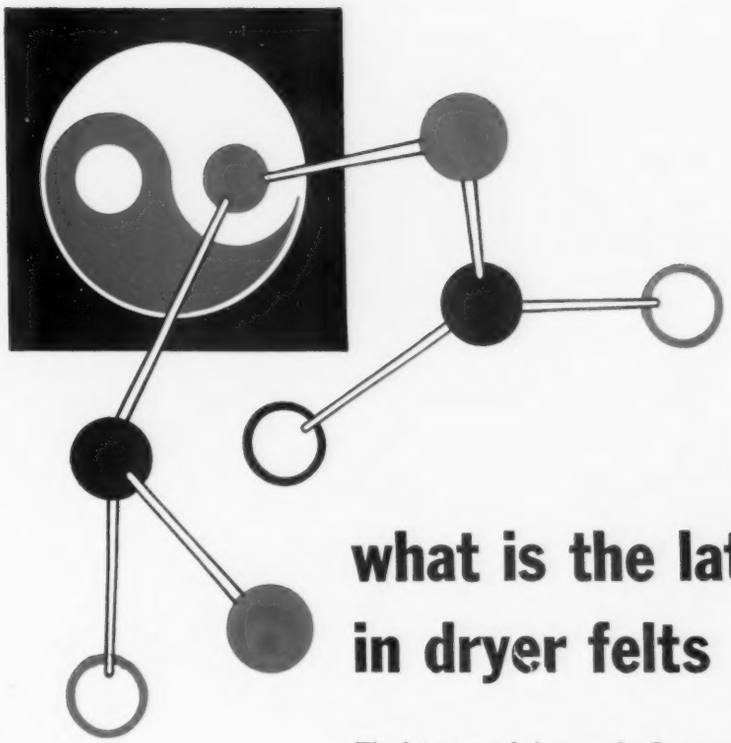

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